

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 q
Edition : 21.08.92
Replaces : 09.91
Test oil : ISO-4113

Combination no. : 0 402 046 827

Injection pump
Pump designation : PES6P120A320RS3284
EP type number : 0 412 026 749
Governor
Governor design. : RQ275/1050PA999-3
Governor no. : 0 421 801 598

Customer-spec. information
Customer : RVI

Engine : MIDR/PR 062045

1st version kW : 186.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.10...10.20

Del.quantity cm3/ : 14.8...15.0

100 s: (14.5...15.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 4.6...5.0

Del.quantity cm3/ : 1.9...2.3
100 s: (1.6...2.6)

Spread cm3 : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 148.0...150.0

1000 : (145.0...153.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.10

Speed rpm : 1130...1145

2nd rack travel in: 4.00

Speed rpm : 1200...1230
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 5.3

Testing:

Speed rpm : 200
Minimum rack travel: 6.40
Speed rpm : 275
Rack travel in mm : 4.70...4.90
Rack travel in mm : 2.20
Speed rpm : 320...360

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 700
Rack travel in m: 10.50...10.60
2nd speed rpm : 1050
Rack travel in m: 10.40...10.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 10.10...10.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.00...8.20
2nd pressure hPa : 200
Rack travel in m: 8.50...8.60
3rd pressure hPa : 360
Rack travel in m: 9.40...9.80

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm3/ : 146.0...152.0
1000 s: (143.0...155.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm3/ : 79.0...81.0
1000 s: (76.0...84.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.10
Speed rpm : 1130...1145

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 155.0...185.0
1000 s: (151.0...189.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.16...5.00
Del.quantity cm3/ : 19.0...23.0
1000 s: (16.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 12,0 l
Edition : 21.08.92
Replaces : 11.91
Test oil : ISO-4113

Combination no. : 0 402 046 828

Injection pump
Pump designation : PES6P120A320RS3288
EP type number : 0 412 026 750
Governor
Governor design. : RQV275...1000PA995-2
Governor no. : 0 421 813 940

Customer-spec. information
Customer : RVI

Engine : MIDR 063540 M/3

1st version kw : 236.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 683 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.35...3.45
: (3.30...3.50)
Rack travel in mm : 18.00...21.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 23.9...24.1

100 s: (23.6...24.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.3

Del.quantity cm3/ : 2.3...2.7

100 s: (2.0...3.0)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1070
travel mm : 8.30...8.50

2nd speed rpm : 275
travel mm : 1.20...1.40

3rd speed rpm : 500
travel mm : 3.60...4.20

4th speed rpm : 750
travel mm : 5.70...6.10

5th speed rpm : 1450
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1180

Rack travel in mm : 9.40...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 239.0...241.0

1000 : (236.0...244.0)

Spread cm³ : 5.00
1000 : (9.00)

RATE/ SPEED

1st version
Control lever
position degrees: 302...310

Testing:

1st rack travel in: 11.40
Speed rpm : 1065...1075
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 244...252

Testing:

Speed rpm : 200
Minimum rack travel: 6.60
Speed rpm : 300
Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

Speed rpm : 310...420

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 12.40...12.50

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.60...10.00
2nd pressure hPa : 280
Rack travel in m: 11.50...11.60
3rd pressure hPa : 160
Rack travel in m: 10.50...10.70

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1000

A04

Del.quantity cm³/ : 225.0...231.0
1000 s: (222.0...234.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 143.0...145.0
1000 s: (140.0...148.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.40
Speed rpm : 1065...1075

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 145.0...175.0
1000 s: (141.0...179.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.90...5.30
Del.quantity cm³/ : 23.0...27.0
1000 s: (20.0...30.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 s
Edition : 24.07.92
Replaces : 10.91
Test oil : ISO-4113

Combination no. : 0 402 046 830

Injection pump
Pump designation : PES6P120A320RS3290
EP type number : 0 412 026 751
Governor
Governor design. : RQ275/950PA999-4
Governor no. : 0 421 801 612

Customer-spec. information

Customer : RVI

Engine : MIDR/PRO62045

1st version kW : 151.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30
: (4.15...4.35)
Rack travel in mm : 18.00...21.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 13.9...14.1

100 s: (13.6...14.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.8...5.2

Del.quantity cm3/ : 2.0...2.6

100 s: (1.7...2.9)

Spread cm3 : 0.8

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 500

Aneroid pressure h: 1000

Del.quantity : 139.0...141.0

1000 : (136.0...144.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.80

Speed rpm : 1010...1025

2nd rack travel in: 4.00

Speed rpm : 1095...1125
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 5.0

Testing:

Speed rpm : 150
Minimum rack travel: 6.50
Speed rpm : 250
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 315...355

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 500
Rack travel in m: 13.20...13.30
2nd speed rpm : 950
Rack travel in m: 13.10...13.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 12.80...12.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.95...10.90
2nd pressure hPa : 160
Rack travel in m: 11.20...11.30
3rd pressure hPa : 320
Rack travel in m: 12.10...12.40

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 950
Del.quantity cm3/ : 153.0...159.0
1000 s: (150.0...162.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm3/ : 99.0...101.0
1000 s: (96.0...104.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1010...1025

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...170.0
1000 s: (136.0...174.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.80...5.20
Del.quantity cm3/ : 20.0...26.0
1000 s: (17.0...29.0)
Spread cm3 : 8.00
1000 s: (8.00)

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI
Edition : 24.07.92
Replaces : 05.92
Test oil : ISO-4113

Combination no. : 0 402 046 836

Injection pump

Pump designation : PES6P120A320RS3303
EP type number : 0 412 026 755
Governor
Governor design. : RQV275...1050PA1038K
Governor no. : 0 421 815 313

Customer-spec. information
Customer : RVI

Engine : MIDR 062045 J/3

1st version kW : 169.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 15.3...15.5

100 s: (15.0...15.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.1...5.3

Del.quantity cm3/ : 1.9...2.3

100 s: (1.6...2.6)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1140

travel mm : 8.90...9.10

2nd speed rpm : 275

travel mm : 1.20...1.40

3rd speed rpm : 380

travel mm : 2.90...3.50

4th speed rpm : 740

travel mm : 6.00...6.40

5th speed rpm : 1480

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1330

Rack travel in mm : 7.90...11.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 153.0...155.0

1000 : (150.0...158.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 268...276

Testing:

1st rack travel in: 9.90
Speed rpm : 1115...1125
2nd rack travel in: 4.00
Speed rpm : 1235...1265
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 238...246

Testing:

Speed rpm : 175
Minimum rack travel: 6.70
Speed rpm : 275
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

Speed rpm : 280...380

TORQUE CONTROL

Dimension a mm : 0.70
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 10.90...11.00
2nd speed rpm : 700
Rack travel in m: 10.00...10.20

START CUT-OUT

Speed 1/min : 210 (230)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del.quantity cm³/ : 131.0...137.0
1000 s: (128.0...140.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1115...1125

STARTING FUEL DELIVERY

AQ8

Speed rpm : 100
Del.quantity cm³/ : 155.0...185.0
1000 s: (151.0...189.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.10...5.50
Del.quantity cm³/ : 19.0...23.0
1000 s: (16.0...26.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC
Edition : 24.07.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 046 837

Injection pump
Pump designation : PES6P100A320RS3304
EP type number : 0 412 006 702
Governor
Governor design. : RGV350...1200PA1037K
Governor no. : 0 421 815 312

Customer-spec. information
Customer : NAVISTAR

Engine : DTA-466

1st version kW : 210.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.50

Overflow
quantity min. 1/h: 240...260

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.35...3.45
: (3.30...3.50)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 13.50...13.60

Del.quantity cm3/ : 14.8...15.0

100 s: (14.6...15.2)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 2.1...2.5

100 s: (1.8...2.7)

Spread cm3 : 0.6

100 s: (0.8)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.40...1.60

2nd speed rpm : 500

travel mm : 3.20...3.60

3rd speed rpm : 800

travel mm : 11.80...12.20

4th speed rpm : 1265

travel mm : 8.70...8.90

5th speed rpm : 1460

travel mm : 10.40...10.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 900

Del.quantity : 148.0...150.0

1000 : (146.0...152.0)

Spread cm³ : 4.00
 1000 : (6.50)

RATED SPEED

1st version
Control lever
position degrees: 58...66

Testing:
1st rack travel in: 12.50
Speed rpm : 1240...1270
2nd rack travel in: 4.00
Speed rpm : 1430...1440
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 16...24

Testing:
Speed rpm : 275
Minimum rack travel: 7.20
Speed rpm : 350
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 13.50...13.60
2nd speed rpm : 800
Rack travel in m: 13.40...13.60
3rd speed rpm : 650
Rack travel in m: 12.80...13.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 800
Pressure hPa : 900
Rack travel mm : 13.40...13.60

Measurement
Speed 1/min : 800

1st pressure hPa : -
Rack travel in m: 8.10...8.50
2nd pressure hPa : 240
Rack travel in m: 9.60...9.70
3rd pressure hPa : 455
Rack travel in m: 12.00...12.40

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 800
Del. quantity cm³/ : 159.0...163.0
 1000 s: (157.0...165.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 74.0...78.0
 1000 s: (72.0...80.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.50
Speed rpm : 1240...1270

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 135.0...175.0
 1000 s: (130.0...180.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.90...6.10
Del. quantity cm³/ : 21.0...25.0
 1000 s: (18.5...27.5)
Spread cm³ : 6.00
 1000 s: (8.00)

Remarks:
 : NAVISTAR #1818499C91

Limit shutoff stop screw to 1.0 mm.

Bow dimension:
Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 y 1
 Edition : 24.07.92
 Replaces : 04.92
 Test oil : ISO-4113
 Combination no. : 0 402 076 722
 Injection pump
 Pump designation : PES6P120A72ORS3203
 EP type number : 0 412 026 728
 Governor
 Governor design. : RSV400...1100P2A534
 Governor no. : 0 421 833 275

Customer spec. information
 Customer : JOHN DEERE

Engine : 6076 HF

1st version kW : 205.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X3.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65
 : (3.50...3.70)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 16.8...17.0

100 s: (16.6...17.2)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.2...5.4

Del.quantity cm3/ : 2.0...2.4

100 s: (1.8...2.6)

Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 168.0...170.0

1000 : (166.0...172.0)

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 36...44

Testing:

1st rack travel in: 11.50
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1185...1195
3rd rack travel in: 4.00
Speed rpm : 1185...1215
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 12...20
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.80

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.20...5.40

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.50...12.60
2nd speed rpm : 750
Rack travel in m: 13.00...13.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.70...10.90

Measurement
Speed 1/min : 500

1st pressure hPa : 585
Rack travel in m: 11.10...11.20
2nd pressure hPa : 770
Rack travel in m: 12.20...12.60
3rd pressure hPa : 1200
Rack travel in m: 13.00...13.20

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm³/ : 174.5...178.5
1000 s: (172.5...180.5)
Aneroid pressure h: -
Speed rpm : 800

Del.quantity cm³/ : 117.5...121.5
1000 s: (114.5...124.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.50
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.20...5.40
Del.quantity cm³/ : 20.0...24.0
1000 s: (18.0...26.0)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:
: JOHN DEERE # RE32035

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark at 10° cam
rotation angle after start of delivery,
cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 y
Edition : 24.07.92
Replaces : 03.92
Test oil : ISO-4113

Combination no. : 0 402 076 723

Injection pump
Pump designation : PES6P120A720RS3203
EP type number : 0 412 026 728
Governor
Governor design. : RSV400...11COP2A534-
1
Governor no. : 0 421 833 276

Customer spec. information
Customer : JOHN DEERE

Engine : 6076 AF & HF

1st version kW : 187.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
x Wall thickness : 6.00X3.00X600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65
: (3.50...3.70)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.20...12.30

Del. quantity cm³/ : 15.5...15.7

100 s: (15.3...15.9)

Spread cm³ : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.5...5.7

Del. quantity cm³/ : 2.5...2.9
100 s: (2.3...3.2)

Spread cm³ : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del. quantity : 155.0...157.0

1000 : (153.0...159.0)

Spread cm³ : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control Lever

position degrees: 44...52

Testing:

1st rack travel in: 11.20
Speed rpm : 1150...1160
2nd rack travel in: 4.00
Speed rpm : 1225...1235
3rd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1400
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 20...28
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.1

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.50...5.70

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.20...12.30
2nd speed rpm : 650
Rack travel in m: 13.40...13.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.40...13.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.60...10.80
2nd pressure hPa : 895
Rack travel in m: 12.70...12.80
3rd pressure hPa : 720
Rack travel in m: 11.30...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 650
Del.quantity cm³/ : 187.0...191.0
1000 s: (185.0...193.0)
Aneroid pressure h: -
Speed rpm : 800

Del.quantity cm³/ : 118.0...122.0
1000 s: (116.0...124.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.20
Speed rpm : 1150...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.50...5.70
Del.quantity cm³/ : 25.5...29.5
1000 s: (23.0...32.0)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE32033

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,7 b
Edition : 24.07.92
Replaces : 05.90
Test oil : ISO-4113

Combination no. : 0 402 076 727

Injection pump
Pump designation : PES6P120A720RS3203
EP type number : 0 412 026 728
Governor
Governor design. : RSV400...1100P2A534-
2
Governor no. : 0 421 833 290

Customer spec. information
Customer : JOHN DEERE

Engine : 6076AF

1st version kW : 168.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X3.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65
: (3.50...3.70)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.00...12.10

Del.quantity cm³/ : 15.3...15.5

100 s: (15.1...15.7)

Spread cm³ : 0.4

100 s: (0.6)

2nd speed rpm : 400.0
Rack travel in mm : 4.8...5.0
Del.quantity cm³/ : 1.7...2.2
100 s: (1.5...2.5)

Spread cm³ : 0.6
100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 153.5...155.5

1000 : (151.5...157.5)

Spread cm³ : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 11.00
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1195...1205
3rd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.4

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 4.80...5.00

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.00...12.10
2nd speed rpm : 700
Rack travel in m: 13.00...13.20

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.00...13.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.30...11.50
2nd pressure hPa : 510
Rack travel in m: 11.80...11.90
3rd pressure hPa : 645
Rack travel in m: 12.40...12.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 700
Del. quantity cm³/ : 178.5...182.5
1000 s: (176.5...184.5)
Aneroid pressure h: -
Speed rpm : 800

Del. quantity cm³/ : 138.5...142.5
1000 s: (136.5...144.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.00
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 4.80...5.00
Del. quantity cm³/ : 17.5...22.5
1000 s: (15.0...25.0)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE32034

Adjustment without torque-control
spring retainer with 1 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,7 c
Edition : 24.07.92
Replaces : 02.90
Test oil : ISO-4113

Combination no. : 0 402 076 728

Injection pump
Pump designation : PES6P120A720RS3203
EP type number : 0 412 026 728
Governor
Governor design. : RSV425...1050P2A489-
2
Governor no. : 0 421 833 291

Customer-spec. information
Customer : JOHN DEERE

Engine : 6076 HRW01

1st version kW : 175.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
x Wall thickness : 6.00X3.00X600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

A17

Prestroke mm : 3.55...3.65
(3.50...3.70)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 16.6...16.8

100 s : (16.3...17.0)

Spread cm3 : 0.4

100 s : (0.6)

2nd speed rpm : 425.0
Rack travel in mm : 5.5...5.7
Del.quantity cm3/ : 3.1...3.6
100 s : (2.9...3.9)
Spread cm3 : 0.6
100 s : (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1200

Del.quantity : 166.0...168.0

1000 : (163.5...170.5)

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 11.40
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1160...1170
4th rack travel in: 1250
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 20...28
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 5.1

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 610...670

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.40...12.50
2nd speed rpm : 600
Rack travel in m: 13.60...13.80

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.60...13.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.10...12.30
2nd pressure hPa : 725
Rack travel in m: 12.50...12.60
3rd pressure hPa : 815
Rack travel in m: 12.90...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 600
Del.quantity cm³/ : 197.5...202.5
1000 s: (195.0...205.0)
Aneroid pressure h: -
Speed rpm : 800

Del.quantity cm³/ : 157.0...161.0
1000 s: (154.0...164.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.40
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 425
Rack travel in mm : 5.50...5.70
Del.quantity cm³/ : 31.5...36.5
1000 s: (29.0...39.0)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE32888

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE
Edition : 24.07.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 076 740
Injection pump
Pump designation : PES6P120A720RS3203
EP type number : 0 412 026 728
Governor
Governor design. : RSV425...1050P2A548
Governor no. : 0 421 833 351

Customer-spec. information
Customer : JOHN DEERE

Engine : 6076 HRW01

1st version kW : 185.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X3.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65
: (3.50...3.70)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050
Rack travel in mm : 11.80...11.90
Del.quantity cm³/ : 15.1...15.3
100 s: (14.9...15.5)
Spread cm³ : 0.4
100 s: (0.6)

2nd speed rpm : 425.0
Rack travel in mm : 4.8...5.0
Del.quantity cm³/ : 1.6...2.0
100 s: (1.3...2.2)
Spread cm³ : 0.6
100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Aneroid pressure h: 1200
Del.quantity : 151.0...153.0
1000 : (149.0...155.0)
Spread cm³ : 4.00
1000 : (6.50)

RATED SPEED

1st version
Control lever
position degrees: 41...49

Testing:

1st rack travel in: 10.80
Speed rpm : 1110...1120
2nd rack travel in: 4.00
Speed rpm : 1160...1170
3rd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 18...26
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 4.4

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 4.80...5.00

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 11.80...11.90
2nd speed rpm : 600
Rack travel in m: 13.00...13.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.00...13.20

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.90...12.10
2nd pressure hPa : 740
Rack travel in m: 12.30...12.40
3rd pressure hPa : 815
Rack travel in m: 12.70...13.10

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 600
Del.quantity cm³/ : 187.0...191.0
1000 s: (185.0...193.0)
Aneroid pressure h: -
Speed rpm : 800

Del.quantity cm³/ : 156.0...160.0
1000 s: (154.0...162.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.80
Speed rpm : 1110...1120

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 425
Rack travel in mm : 4.80...5.00
Del.quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:
: JOHN DEERE # RE47353

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 y 2
Edition : 24.07.92
Replaces : 03.92
Test oil : ISO-4113

Combination no. : 0 402 076 742

Injection pump
Pump designation : PES6P120A72ORS3203
EP type number : 0 412 026 728
Governor
Governor design. : RSV400...1050P2A534-7
Governor no. : 0 421 833 356

Customer-spec. information
Customer : JOHN DEERE

Engine : 6076 HZ030

1st version kW : 193.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
x Wall thickness : 6.00X3.00X600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

A21

Prestroke mm : 3.55...3.65
(3.50...3.70)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.30...12.40

Del. quantity cm3/ : 15.7...15.9

100 s: (15.5...16.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 6.7...6.9

Del. quantity cm3/ : 3.9...4.3

100 s: (3.6...4.5)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 900

Del. quantity : 157.5...159.5

1000 : (155.5...161.5)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 11.30
Speed rpm : 1095...1105
2nd rack travel in: 4.00
Speed rpm : 1155...1165
3rd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 6.3

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 6.70...6.90

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.30...12.40
2nd speed rpm : 700
Rack travel in m: 13.70...13.90

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.70...13.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.70...10.90
2nd pressure hPa : 390
Rack travel in m: 11.40...11.50
3rd pressure hPa : 605
Rack travel in m: 12.60...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm³/ : 192.0...196.0
1000 s: (190.0...198.0)
Aneroid pressure h: -
Speed rpm : 800

Del.quantity cm³/ : 116.5...120.5
1000 s: (114.5...122.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.30
Speed rpm : 1095...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 6.70...6.90
Del.quantity cm³/ : 39.0...43.0
1000 s: (36.5...45.5)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: JOHN DEERE # RE47549

Adjustment without torque-control
spring retainer with 1 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 y 3
Edition : 24.07.92
Replaces : 03.92
Test oil : ISO-4113

Combination no. : 0 402 076 743

Injection pump
Pump designation : PES6P120A720RS3203
EP type number : 0 412 026 728
Governor
Governor design. : RSJ425...1100P2A534-8
Governor no. : 0 421 833 370

Customer-spec. information
Customer : JOHN DEERE

Engine : 6076 AN 030

1st version kW : 187.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
x Wall thickness : 6.00X3.00X600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65
: (3.50...3.70)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 15.5...15.7

100 s : (15.3...15.9)

Spread cm3 : 0.4

100 s : (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 5.5...5.7

Del.quantity cm3/ : 2.5...2.9
100 s : (2.3...3.2)

Spread cm3 : 0.6

100 s : (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 155.0...157.0
1000 : (153.0...159.0)

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 44...52

Testing:

1st rack travel in: 11.20
Speed rpm : 1150...1160
2nd rack travel in: 4.00
Speed rpm : 1225...1235
3rd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1400
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 20...28
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 5.1

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 5.50...5.70

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.20...12.30
2nd speed rpm : 650
Rack travel in m: 13.40...13.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.40...13.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.60...10.80
2nd pressure hPa : 895
Rack travel in m: 12.70...12.80
3rd pressure hPa : 720
Rack travel in m: 11.30...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 650
Del. quantity cm³/ : 187.0...191.0
1000 s: (185.0...193.0)
Aneroid pressure h: -
Speed rpm : 800

Del. quantity cm³/ : 118.0...122.0
1000 s: (116.0...124.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.20
Speed rpm : 1150...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 425
Rack travel in mm : 5.50...5.70
Del. quantity cm³/ : 25.5...29.5
1000 s: (23.0...32.0)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE47394

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE
Edition : 24.07.92
Replaces : 04.92
Test oil : ISO-4113

Combination no. : 0 402 076 745

Injection pump
Pump designation : PES6P120A72ORS3203
EP type number : 0 412 026 728
Governor
Governor design. : RSV625...1100P2A534-9
Governor no. : 0 421 833 372

Customer-spec. information
Customer : JOHN DEERE

Engine : 6076 HZ 031

1st version kW : 205.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X3.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

A25

Prestroke mm : 3.55...3.65
: (3.50...3.70)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.70...12.80

Del. quantity cm³/ : 17.4...17.6
100 s: (17.2...17.8)

Spread cm³ : 0.4
100 s: (0.6)

2nd speed rpm : 625.0
Rack travel in mm : 5.4...5.6
Del. quantity cm³/ : 2.7...3.1
100 s: (2.5...3.3)
Spread cm³ : 0.6
100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Aneroid pressure h: 1200
Del. quantity : 174.5...176.5
1000 : (172.5...178.5)
Spread cm³ : 4.00
1000 : (6.50)

RATED SPEED

1st version
Control lever
position degrees: 42...50

Testing:

1st rack travel in: 11.70
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1205...1215
3rd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1350
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 22...30
Setting point w/out bumper spring
Speed rpm : 625
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 625
Rack travel in mm : 5.40...5.60

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.70...12.80
2nd speed rpm : 700
Rack travel in m: 13.30...13.50

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.30...13.50

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.60...11.80
2nd pressure hPa : 645
Rack travel in m: 12.10...12.20
3rd pressure hPa : 840
Rack travel in m: 12.90...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 700
Del.quantity cm³/ : 187.0...191.0
1000 s: (185.0...193.0)
Aneroid pressure h: -
Speed rpm : 800

Del.quantity cm³/ : 143.0...147.0
1000 s: (141.0...149.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 625
Rack travel in mm : 5.40...5.60
Del.quantity cm³/ : 27.0...31.0
1000 s: (25.0...33.0)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE47399

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE
Edition : 24.07.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 076 747
Injection pump
Pump designation : PES6P110A72ORS3224-1
EP type number : 0 412 016 739
Governor
Governor design. : RSV475...1100P2A534-11
Governor no. : 0 421 833 377

Customer-spec. information
Customer : JOHN DEERE

Engine : 6101 AT 001

1st version kW : 170.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X3.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05
: (2.90...3.10)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100
Rack travel in mm : 13.30...13.40
Del.quantity cm3/ : 16.2...16.4
100 s: (16.0...16.6)
Spread cm3 : 0.4
100 s: (0.6)

2nd speed rpm : 475.0
Rack travel in mm : 5.2...5.4
Del.quantity cm3/ : 1.0...1.4
100 s: (0.7...1.6)
Spread cm3 : 0.6
100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Aneroid pressure h: 600
Del.quantity : 162.0...164.0
1000 : (160.0...166.0)
Spread cm3 : 4.00
1000 : (6.50)

RATED SPEED

1st version
Control lever
position degrees: 36...44

Testing:

1st rack travel in: 12.30
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1200...1210
3rd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1350
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 13...21
Setting point w/out bumper spring
Speed rpm : 475
Rack travel in mm : 4.8

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 475
Rack travel in mm : 5.20...5.40

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 13.30...13.40
2nd speed rpm : 600
Rack travel in m: 13.80...14.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 600
Rack travel mm : 13.80...14.00

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.60...11.80
2nd pressure hPa : 265
Rack travel in m: 13.30...13.40
3rd pressure hPa : 135
Rack travel in m: 12.10...12.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 300
Speed rpm : 600
Del.quantity cm³/ : 177.0...181.0
1000 s: (175.0...183.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 130.5...134.5
1000 s: (128.5...136.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.30
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 125.0...145.0
1000 s: (120.0...150.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 475
Rack travel in mm : 5.20...5.40
Del.quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE51966

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle
after start of delivery cyl. 1

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE
Edition : 21.08.92
Replaces : 06.92
Test oil : ISO-4113

Combination no. : 0 402 076 748

Injection pump
Pump designation : PES6P110A720RS3305
EP type number : 0 412 016 740
Governor
Governor design. : RSV300...1100P1A555
Governor no. : 0 421 833 379

Customer-spec. information
Customer : LIEBHERR

Engine : D 926 TI

1st version kW : 210.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00

B01

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 15.30...15.40

Del.quantity cm3/ : 18.3...18.5

100 s: (18.0...18.7)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 400.0

Rack travel in mm : 7.3...7.5

Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1300

Del.quantity : 183.0...185.0

1000 : (180.5...187.5)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 96...104

Testing:

1st rack travel in: 14.30

Speed rpm : 1040...1050

2nd rack travel in: 4.00

Speed rpm : 1080...1110
3rd rack travel in: 4.00
Speed rpm : 1115...1145
4th rack travel in: 1260
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 69...77
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 6.9
Speed rpm : 400
Rack travel in mm : 7.30...7.50
Rack travel in mm : 2.00
Speed rpm : 560...620

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 15.30...15.40
2nd speed rpm : 500
Rack travel in m: 15.30...15.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 550
Pressure hPa : 1300
Rack travel mm : 15.30...15.40

Measurement

Speed 1/min : 550

1st pressure hPa : -
Rack travel in m: 13.40...13.60
2nd pressure hPa : 510
Rack travel in m: 13.70...13.80
3rd pressure hPa : 640
Rack travel in m: 14.90...15.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 550
Del.quantity cm3/ : 149.0...151.0
1000 s: (146.5...153.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 14.30

B02

Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 145.0...165.0
1000 s: (141.0...169.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 7.30...7.50
Del.quantity cm3/ : 10.0...16.0
1000 s: (7.5...18.5)
Spread cm3 : 4.50
1000 s: (7.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : BAO 31,8 e
Edition : 24.07.92
Replaces : 03.92
Test oil : ISO-4113

Combination no. : 0 402 630 804

Injection pump
Pump designation : PE12P120A120RS7193
EP type number : 0 412 620 820
Governor
Governor design. : RQV275...1000PA938
Governor no. : 0 421 813 822

Customer-spec. information
Customer : BAUDOUIN

Engine : V12P15-2

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
: (3.55...3.75)
Rack travel in mm : 9.00...12.00

Firing order : 1- 12- 9- 4- 5- 8-
11- 2- 3- 10- 7- 6

Phasing : 0-45-60-105-120-165-
180-225-240-285-300-
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.50...13.60

Del. quantity cm3/ : 37.9...38.1

100 s: (37.6...38.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.7...6.1

Del. quantity cm3/ : 2.7...3.3

100 s: (2.4...3.6)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275
travel mm : 0.60...1.00

2nd speed rpm : 450
travel mm : 3.00...3.40

3rd speed rpm : 700
travel mm : 5.00...5.40

4th speed rpm : 1000
travel mm : 7.60...7.80

5th speed rpm : 1300
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 11.20...13.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 900

Del.quantity : 379.0...381.0
1000 : (376.0...384.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:

1st rack travel in: 12.50
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 63...71

Testing:

Speed rpm : 100
Minimum rack travel: 7.50
Speed rpm : 275
Rack travel in mm : 5.80...6.00

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.50...13.60

Measurement

Speed 1/min : 500

1st pressure hPa : —
Rack travel in m: 12.00...12.10
2nd pressure hPa : 350
Rack travel in m: 13.10...13.20
3rd pressure hPa : 250
Rack travel in m: 12.30...12.60

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: —
Speed rpm : 500

Del.quantity cm3/ : 324.0...330.0
1000 s: (321.0...333.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.50
Speed rpm : 1040...1050

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.70...6.10
Del.quantity cm3/ : 27.0...33.0
1000 s: (24.0...36.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : BAO
Edition : 24.07.92
Replaces : 03.92
Test oil : ISO-4113

Combination no. : 0 402 630 808

Injection pump
Pump designation : PE12P120A120RS7254
EP type number : 0 412 620 832
Governor
Governor design. : RGV275...1000PA938
Governor no. : 0 421 813 822

Customer-spec. information
Customer : BAUDOUIN

Engine : V12 BTI

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
: (3.55...3.75)
Rack travel in mm : 9.00...12.00

Firing order : 1- 12- 9- 4- 5- 8-
11- 2- 3- 10- 7- 6

Phasing : 0-45-60-105-120-165-
180-225-240-285-300-
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.50...13.60

Del.quantity cm3/ : 37.9...38.1

100 s: (37.6...38.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.7...6.1

Del.quantity cm3/ : 2.7...3.3

100 s: (2.4...3.6)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275
travel mm : 0.60...1.00

2nd speed rpm : 450
travel mm : 3.00...3.40

3rd speed rpm : 700
travel mm : 5.00...5.40

4th speed rpm : 1000
travel mm : 7.60...7.80

5th speed rpm : 1300
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 11.20...13.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 900

Del.quantity : 379.0...381.0
1000 : (376.0...384.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 12.50
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 63...71

Testing:
Speed rpm : 100
Minimum rack travel: 7.50
Speed rpm : 275
Rack travel in mm : 5.80...6.00

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.50...13.60

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.00...12.10
2nd pressure hPa : 350
Rack travel in m: 13.10...13.20
3rd pressure hPa : 250
Rack travel in m: 12.30...12.60

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm3/ : 324.0...330.0
1000 s: (321.0...333.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.50
Speed rpm : 1040...1050

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.70...6.10
Del.quantity cm3/ : 27.0...33.0
1000 s: (24.0...36.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : BAO
Edition : 24.07.92
Replaces : 03.92
Test oil : ISO-4113
Combination no. : 0 402 630 809
Injection pump
Pump designation : PE12P120A120RS7253
EP type number : 0 412 620 831
Governor
Governor design. : RQV400...750PA935
Governor no. : 0 421 813 819

Customer-spec. information
Customer : BAUDOUIN

Engine : V12P15-2

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 025
Inlet press., bar : 1.50
Test nozzle holder
assembly : 1 688 901 019
Opening
pressure, bar : 207...210
Orifice plate
diameter mm : 0,8
Test lines : 1 680 750 075
Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
: (3.55...3.75)
Rack travel in mm : 9.00...12.00

Firing order : 1- 12- 9- 4- 5- 8-
11- 2- 3- 10- 7- 6

Phasing : 0-45-60-105-120-165-
180-225-240-285-300-
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
Rack travel in mm : 14.00...14.10
Del.quantity cm3/ : 41.9...42.1
100 s : (41.6...42.4)
Spread cm3 : 0.5
100 s : (0.9)
2nd speed rpm : 400.0
Rack travel in mm : 4.0...4.4
Del.quantity cm3/ : 1.7...2.3
100 s : (1.4...2.6)
Spread cm3 : 0.8
100 s : (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Del.quantity : 419.0...421.0
1000 : (416.0...424.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: ?

Testing:
1st rack travel in: 13.00
Speed rpm : 750...755
2nd rack travel in: 4.00
Speed rpm : 781...794
4th rack travel in: 900
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 66...74

Testing:

Speed rpm : 100
Minimum rack trave: 5.70
Speed rpm : 400
Rack travel in mm : 4.10...4.30

START CUT-OUT

Speed 1/min : 340 (360)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 750...755

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 31.07.92
Replaces : 03.92
Test oil : ISO-4113

Combination no. : 0 402 640 837

Injection pump
Pump designation : PE12P120A320LS7855
EP type number : 0 412 620 835
Governor
Governor design. : RG400/106SPA1024
Governor no. : 0 421 801 634

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kw : 485.0

Rated speed : 2130

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 150...170

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 9.00...12.00
Firing order : 12- 1- 5- 9- 8- 3-
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
180-225-240-285-300-
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1065

Rack travel in mm : 13.90...14.00

Del.quantity cm3/ : 21.1...21.3

100 s: (20.8...21.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 4.8...5.4

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1065

Aneroid pressure h: 1000

Del.quantity : 211.0...213.0

1000 : (208.0...216.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.90
Speed rpm : 1110...1125
2nd rack travel in: 4.00
Speed rpm : 1210...1240
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.1

Testing:

Speed rpm : 300
Minimum rack travel: 6.90
Speed rpm : 400
Rack travel in mm : 4.80...5.40
Rack travel in mm : 2.00
Speed rpm : 460...500

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : -
Rack travel mm : 10.80...11.10

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 11.50...11.70
2nd pressure hPa : 500
Rack travel in m: 12.80...13.00

START CUT-OUT

Speed 1/min : 320 (340)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 600
Del.quantity cm3/ : 205.0...209.0
1000 s: (202.0...212.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 144.0...146.0
1000 s: (141.0...149.0)

Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.90
Speed rpm : 1110...1125

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

Remarks:

APPLICATION

Rail car

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
Edition : 31.07.92
Replaces : 07.92
Test oil : ISO-4113

Combination no. : 0 402 640 838

Injection pump
Pump designation : PE12P120A520LS7829-1
EP type number : 0 412 620 827
Governor
Governor design. : RQV300...1150PA1039-1K
Governor no. : 0 421 815 315

Customer-spec. information
Customer : MAN

Engine : D2842LYE

1st version kW : 809.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
: (4.45...4.65)
Rack travel in mm : 9.00...12.00
Firing order : 12- 1- 5- 9- 8- 3-
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
Phasing : 180-225-240-285-300-
345
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150
Rack travel in mm : 13.80...13.90
Del. quantity cm³/ : 30.4...30.6
100 s: (30.1...30.9)
Spread cm³ : 0.5
100 s: (0.9)

2nd speed rpm : 500
Rack travel in mm : 9.2...9.4
Del. quantity cm³/ : 14.9...15.1
100 s: (14.6...15.4)
Spread cm³ : 0.8
100 s: (1.2)
3rd speed rpm : 300
Rack travel in mm : 7.30...7.50
Del. quantity cm³/ : 5.2...5.6 *
100 s: (-)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 2.00...2.20
2nd speed rpm : 450
travel mm : 4.00...4.40
3rd speed rpm : 800
travel mm : 6.70...7.10
4th speed rpm : 1200
travel mm : 10.30...10.50
5th speed rpm : 1400
travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1280

Rack travel in mm : 10.80...14.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 1300

Del.quantity : 304.0...306.0

1000 : (301.0...309.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 116...124

Testing:

1st rack travel in: 12.80

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1310...1340

4th rack travel in: 1400

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 70...78

Testing:

Speed rpm : 200

Minimum rack travel: 6.70

Speed rpm : 300

Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

Speed rpm : 270...390

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 13.80...13.90

2nd speed rpm : 400

Rack travel in m: 12.00...12.20

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 1150

Pressure hPa : 1300

Rack travel mm : 13.80...13.90

Measurement

Speed 1/min : 1150

1st pressure hPa : -

Rack travel in m: 9.20...9.40

2nd pressure hPa : 200

Rack travel in m: 9.60...9.70

3rd pressure hPa : 800

Rack travel in m: 12.50...12.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm³/ : 149.0...151.0

1000 s: (146.0...154.0)

Spread cm³ : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

imm rack travel less than

full load rack tr: 12.80

Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 100.0...120.0 *

1000 s: (-)

Speed rpm : 100

Del.quantity cm³/ : - **

1000 s: (-)

Rack travel in mm : 18.2...21.0

HIGH IDLE

1st version

Speed rpm : 500

Rack travel in mm : 0.00...7.00

Del.quantity cm³/ : - **

1000 s: (-)

2nd version

Speed rpm : 500

Rack travel in mm : 0.00...7.50

Del.quantity cm³/ : 0.0...50.0

1000 s: (-)

3rd version

Speed rpm : 500

Rack travel in mm : 8.50...8.70

Del.quantity cm3/ : 125.0...
1000 s: (-)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.30...7.50
Del.quantity cm3/ : 52.0...60.0 *
1000 s: (-)

Remarks:

: MAN-NR. 3-7226

* applies to cylinders 4, 5, 6, 8, 10
and 12

** applies for cylinders 1, 2, 3, 7, 9
and 11

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 12
start of delivery

APPLICATION

Ship

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
Edition : 31.07.92
Replaces : 07.92
Test oil : ISO-4113

Combination no. : 0 402 640 839

Injection pump
Pump designation : PE12P120A520LS7829-1
EP type number : 0 412 620 827
Governor
Governor design. : RQV300...1150PA1039K
Governor no. : 0 421 815 314

Customer-spec. information
Customer : MAN

Engine : D2842LZE

1st version kW : 809.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
: (4.45...4.65)
Rack travel in mm : 9.00...12.00
Firing order : 12- 1- 5- 9- 8- 3-
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
180-225-240-285-300-
Phasing : 345
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150
Rack travel in mm : 14.70...14.80
Del. quantity cm³/ : 33.4...33.6
100 s: (33.1...33.9)
Spread cm³ : 0.5
100 s: (0.9)

2nd speed rpm : 500
Rack travel in mm : 9.2...9.4
Del. quantity cm³/ : 14.9...15.1
100 s: (14.6...15.4)
Spread cm³ : 0.8
100 s: (1.2)
3rd speed rpm : 300
Rack travel in mm : 7.30...7.50
Del. quantity cm³/ : 5.2...5.6 *
100 s: (-)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 2.00...2.20
2nd speed rpm : 450
travel mm : 4.00...4.40
3rd speed rpm : 800
travel mm : 6.70...7.10
4th speed rpm : 1200
travel mm : 10.30...10.50
5th speed rpm : 1400
travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1265
Rack travel in mm : 11.70...15.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h: 1300
Del.quantity : 334.0...336.0
1000 : (331.0...339.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 116...124

Testing:

1st rack travel in: 13.70
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1330...1360
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 71...79

Testing:

Speed rpm : 200
Minimum rack trave: 6.70
Speed rpm : 300
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

Speed rpm : 270...390

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 14.70...14.80
2nd speed rpm : 400
Rack travel in m: 12.90...13.10

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1150
Pressure hPa : 1300
Rack travel mm : 14.70...14.80

Measurement

Speed 1/min : 1150

1st pressure hPa : -

B15

Rack travel in m: 9.20...9.40
2nd pressure hPa : 200
Rack travel in m: 9.60...9.70
3rd pressure hPa : 800
Rack travel in m: 12.50...12.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.70
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...120.0 *
1000 s: (-)

Speed rpm : 100
Del.quantity cm3/ : - **
1000 s: (-)
Rack travel in mm : 18.2...21.0

HIGH IDLE

1st version

Speed rpm : 500
Rack travel in mm : 0.00...7.00
Del.quantity cm3/ : - **
1000 s: (-)

2nd version

Speed rpm : 500
Rack travel in mm : 0.00...7.50
Del.quantity cm3/ : 0.0...50.0
1000 s: (-)

3rd version

Speed rpm : 500
Rack travel in mm : 8.50...8.70

Del.quantity cm3/ : 125.0...
1000 s: (-)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.30...7.50
Del.quantity cm3/ : 52.0...60.0 *
1000 s: (-)

Remarks:
: MAN-NR. 3-7227

* applies to cylinders 4, 5, 6, 8 ,10
and 12

** applies for cylinders 1, 2, 3, 7, 9
and 11

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 12
start of delivery

APPLICATION

Ship

Note remarks

1st version
Speed rpm : 600
Aneroid pressure h: 650
Del.quantity : 187.0...189.0
1000 : (184.0...192.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:
1st rack travel in: 11.70
Speed rpm : 1045...1060
2nd rack travel in: 4.00
Speed rpm : 1100...1130
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 64...72

Testing:
Speed rpm : 250
Minimum rack travel: 7.60
Speed rpm : 350
Rack travel in mm : 6.00...6.20

CONSTANT REGULATION
Speed rpm : 400...600

TORQUE CONTROL
Dimension a mm : 0.60
2nd speed rpm : 1000
Rack travel in m: 12.70...12.90
3rd speed rpm : 915
Rack travel in m: 13.00...13.20
4th speed rpm : 800
Rack travel in m: 13.30...13.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 650
Rack travel mm : 13.30...13.50

Measurement
Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 11.50...11.70
2nd pressure hPa : 420

B18

Rack travel in m: 12.60...12.80
3rd pressure hPa : -
Rack travel in m: 10.60...10.90

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 1000
Del.quantity cm3/ : 182.0...186.0
1000 s: (179.0...189.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1200
Speed rpm : 800
Del.quantity cm3/ : 196.0...200.0
1000 s: (193.0...203.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 125.0...129.0
1000 s: (122.0...132.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.70
Speed rpm : 1045...1060

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 170.0...190.0
1000 s: (166.0...194.0)

Remarks:

APPLICATION

Rail car

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 31.08.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 640 841

Injection pump
Pump designation : PE12P120A320LS7855
EP type number : 0 412 620 835
Governor
Governor design. : RQ400/1065PA1024
Governor no. : 0 421 801 634

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 485.0
Rated speed : 2130

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 150...170

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 9.00...12.00
Firing order : 12- 1- 5- 9- 8- 3-
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
180-225-240-285-300-
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1065

Rack travel in mm : 13.90...14.00

Del. quantity cm³/ : 21.1...21.3

100 s: (20.8...21.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 4.8...5.4

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 14.60...17.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1065

Aneroid pressure h: 1000

Del. quantity : 211.0...213.0

1000 : (208.0...216.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 15.9

Testing:

1st rack travel in: 12.90
Speed rpm : 1110...1125
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.1

Testing:

Speed rpm : 300
Minimum rack travel: 7.20
Speed rpm : 400
Rack travel in mm : 5.00...5.20
Rack travel in mm : 2.00
Speed rpm : 465...505

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.80...11.10

Measurement

Speed 1/min : 500

1st pressure hPa : 350
Rack travel in m: 11.50...11.70
2nd pressure hPa : 500
Rack travel in m: 12.80...13.00

START CUT-OUT

Speed 1/min : 320 (340)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 600
Del.quantity cm³/ : 205.0...209.0
1000 s: (202.0...212.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 144.0...146.0
1000 s: (141.0...149.0)

Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.90
Speed rpm : 1110...1125

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 210.0...230.0
1000 s: (206.0...234.0)

Remarks:

APPLICATION

Rail car

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 31.07.92
Replaces : 07.92
Test oil : ISO-4113

Combination no. : 0 402 646 798

Injection pump
Pump designation : PE6P120A320LS7854
EP type number : 0 412 626 872
Governor
Governor design. : RQV350...950PA870-17
Governor no. : 0 421 814 005

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 14.90...15.10

Del.quantity cm3/ : 25.1...25.3

100 s: (24.8...25.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.1...5.7

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.30...1.80

2nd speed rpm : 570

travel mm : 3.90...4.40

3rd speed rpm : 850

travel mm : 5.70...6.20

4th speed rpm : 1008

travel mm : 7.40...7.90

5th speed rpm : 1110

travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1070

Rack travel in mm : 11.70...14.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950
Aneroid pressure h: 1200
Del.quantity : 251.0...253.0
1000 : (248.0...256.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 113...121

Testing:

1st rack travel in: 14.00
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1300
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 63...71

Testing:

Speed rpm : 250
Minimum rack travel: 7.70
Speed rpm : 350
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

Speed rpm : 430...480

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 14.90...15.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.50...10.70
2nd pressure hPa : 350
Rack travel in m: 11.70...12.10
3rd pressure hPa : 600
Rack travel in m: 13.00...13.20

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

B22

1st version

Aneroid pressure h: 1200
Speed rpm : 600
Del.quantity cm³/ : 245.0...248.0
1000 s: (242.0...251.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 135.0...137.0
1000 s: (132.0...140.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.00
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 220.0...240.0
1000 s: (216.0...244.0)

Remarks:

APPLICATION

Pistenbully

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 31.08.92
Replaces : 07.92
Test oil : ISO-4113

Combination no. : 0 402 646 799

Injection pump
Pump designation : PE6P120A320LS7852
EP type number : 0 412 626 871
Governor
Governor design. : RQ300/950PA1031-5
Governor no. : 0 421 801 657

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kw : 250.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.90...14.10

Del.quantity cm3/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 234.0...236.0

1000 : (231.0...239.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 13.00
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9

Testing:

Speed rpm : 200
Minimum rack travel: 8.10
Speed rpm : 300
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.50...10.70

Measurement

Speed 1/min : 500

1st pressure hPa : 275
Rack travel in m: 11.20...11.30
2nd pressure hPa : 580
Rack travel in m: 12.90...13.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 950
Del.quantity cm3/ : 230.0...234.0
1000 s: (227.0...237.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 133.0...135.0
1000 s: (130.0...138.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 t 2
 Edition : 27.08.92
 Replaces : 27.05.91
 Test oil : ISO-4113
 Combination no. : 0 402 546 843
 Injection pump
 Pump designation : PE6P120A320LS7808
 EP type number : 0 412 626 816
 Governor
 Governor design. : RQV300...1050PA797-2
 Governor no. : 0 421 813 614

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 240.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.90...14.10

Del. quantity cm³/ : 21.4...21.6

100 s: (21.1...21.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del. quantity cm³/ : 1.3...1.9

100 s: (1.0...2.2)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.20...1.40

2nd speed rpm : 600

travel mm : 4.90...5.10

3rd speed rpm : 1075

travel mm : 7.40...7.60

4th speed rpm : 1100

travel mm : 8.00...8.40

5th speed rpm : 1150

travel mm : 9.00...9.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 15.80...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 900
Del.quantity : 214.0...216.0
1000 : (211.0...219.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 121...129

Testing:
1st rack travel in: 13.80
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 81...89

Testing:
Speed rpm : 200
Minimum rack travel: 7.90
Speed rpm : 300
Rack travel in mm : 5.60...6.20

CONSTANT REGULATION
Speed rpm : 300...450

TORQUE CONTROL
Dimension a mm : 0.30
2nd speed rpm : 1050
Rack travel in m: 14.80...15.00
3rd speed rpm : 800
Rack travel in m: 15.00...15.20
4th speed rpm : 700

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.90...14.10

Measurement
Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 10.70...10.90
2nd pressure hPa : 550
Rack travel in m: 12.90...13.10

3rd pressure hPa : 1050
Rack travel in m: 14.00...14.10 *
4th pressure hPa : 1150
Rack travel in m: 14.40...14.60
5th pressure hPa : -
Rack travel in m: 9.50...9.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1450
Speed rpm : 1050
Del.quantity cm³/ : 231.0...234.0
1000 s: (228.0...237.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1450
Speed rpm : 800
Del.quantity cm³/ : 237.0...241.0
1000 s: (234.0...244.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 142.0...144.0
1000 s: (139.0...147.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.80
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 16,0 c
Edition : 24.07.92
Replaces : 02.90
Test oil : ISO-4113

Combination no. : 0 402 646 883

Injection pump
Pump designation : PE6P130A720RS7122-2
EP type number : 0 412 636 813
Governor
Governor design. : RQV225...930PA922
Governor no. : 0 421 813 763

Customer-spec. information
Customer : VOLVO-TRUCK

Engine : TD162 FL,

1st version kW : 357.0
Rated speed : 1060

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
: (3.55...3.75)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.30...13.40

Del.quantity cm3/ : 28.8...29.1

100 s: (28.5...29.5)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 250.0

Rack travel in mm : 5.0...5.2

Del.quantity cm3/ : 2.5...3.0

100 s: (2.3...3.3)

Spread cm3 : 0.5

100 s: (0.8)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.40

2nd speed rpm : 350

travel mm : 2.10...2.70

3rd speed rpm : 700

travel mm : 5.60...6.20

4th speed rpm : 975

travel mm : 8.20...8.40

5th speed rpm : 1090

travel mm : 9.50...9.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 7.70...10.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 288.5...291.5
1000 : (285.0...295.0)
Spread cm3 : 6.00
1000 : (10.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 12.30
Speed rpm : 970...980
2nd rack travel in: 4.00
Speed rpm : 1075...1105
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 60...68

Testing:
Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 250
Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

Speed rpm : 225...450

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.30...13.40

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.70...9.90
2nd pressure hPa : 80
Rack travel in m: 9.90...10.00
3rd pressure hPa : 610
Rack travel in m: 12.80...13.00

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm3/ : 182.5...185.5
1000 s: (179.0...189.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.30
Speed rpm : 970...980

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 125.0...145.0
1000 s: (121.0...149.0)
Rack travel in mm : 9.70...9.90

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.00...5.20
Del.quantity cm3/ : 25.5...30.5
1000 s: (23.0...33.0)
Spread cm3 : 5.00
1000 s: (8.00)

Remarks:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA
Edition : 24.07.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 646 898
Injection pump
Pump designation : PE6P120A720RS7020
EP type number : 0 412 626 828
Governor
Governor design. : RQ200/1000PA713-9
Governor no. : 0 421 801 516

Customer-spec. information
Customer : SCANIA

Engine : DS11 74

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 025
Inlet press., bar : 1.50
Test nozzle holder
assembly : 1 688 901 019
Opening
pressure, bar : 207...210
Orifice plate
diameter mm : 0,8
Test lines : 1 680 750 015
Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 9.00...12.00

C01

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
Rack travel in mm : 10.90...11.00
Del.quantity cm3/ : 15.9...16.1
100 s: (15.6...16.4)
Spread cm3 : 0.5
100 s: (0.8)
2nd speed rpm : 225.0
Rack travel in mm : 4.6...5.0
Del.quantity cm3/ : 1.8...2.2
100 s: (-)
Spread cm3 : 0.3
100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 600
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 900
Del.quantity : 159.0...161.0
1000 : (156.0...164.0)
Spread cm3 : 5.00
1000 : (8.00)

RATED SPEED

1st version
Setting point:
Speed rpm : 600
Rack travel in mm : 16.5

Testing:
1st rack travel in: 9.90
Speed rpm : 1045...1060
2nd rack travel in: 4.00
Speed rpm : 1185...1215

4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 225
Rack travel in mm : 4.7

Testing:

Speed rpm : 100
Minimum rack trave: 6.20
Speed rpm : 225
Rack travel in mm : 4.60...4.80
Rack travel in mm : 2.00
Speed rpm : 305...345

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 10.90...11.00

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.20...9.60
2nd pressure hPa : 150
Rack travel in m: 9.90...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 1000
Del.quantity cm3/ : 157.0...165.0
1000 s: (155.0...167.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 116.0...120.0
1000 s: (114.0...122.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1045...1060

STARTING FUEL DELIVERY

Speed rpm : 100

CO2

Rack travel in mm : 9.20...9.60

LOW IDLE

Speed rpm : 225
Rack travel in mm : 4.60...4.80

Remarks:

:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

Start-of-delivery setting with ROBO
diaphragm.

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 31.08.92
Replaces : 06.92
Test oil : ISO-4113

Combination no. : 0 402 646 915

Injection pump
Pump designation : PE6P120A320LS7836-10
EP type number : 0 412 626 854
Governor
Governor design. : RQ300/1050PA972
Governor no. : 0 421 801 542

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.40...12.60

Del.quantity cm³/ : 18.2...18.4
100 s: (17.9...18.7)

Spread cm³ : 0.5
100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.3...5.9
Del.quantity cm³/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm³ : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 800
Del.quantity : 182.0...184.0
1000 : (179.0...187.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.10
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:

Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 12.40...12.60

Measurement

Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 10.90...11.10
2nd pressure hPa : 400
Rack travel in m: 11.80...12.00
3rd pressure hPa : 1000
Rack travel in m: 12.60...12.80
4th pressure hPa : 1150
Rack travel in m: 12.90...13.10
5th pressure hPa : -
Rack travel in m: 10.10...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 1050
Del.quantity cm3/ : 201.0...204.0
1000 s: (198.0...207.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm3/ : 202.0...206.0
1000 s: (199.0...209.0)

Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 129.0...131.0
1000 s: (126.0...134.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.10
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 50.0...70.0
1000 s: (46.0...74.0)
Rack travel in mm : 10.10...10.40

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.08.92
 Replaces : 06.92
 Test oil : ISO-4113
 Combination no. : 0 402 646 916
 Injection pump
 Pump designation : PE6P120A320LS7836-10
 EP type number : 0 412 626 854
 Governor
 Governor design. : RQV300...1050PA797
 -17
 Governor no. : 0 421 813 884

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.40...12.60

Del.quantity cm3/ : 18.2...18.4

100 s: (17.9...18.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.9

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.00...1.50

2nd speed rpm : 637

travel mm : 4.90...5.40

3rd speed rpm : 830

travel mm : 6.00...6.50

4th speed rpm : 1107

travel mm : 8.30...8.80

5th speed rpm : 1218

travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 15.20...17.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
Aneroid pressure h: 800
Del.quantity : 182.0...184.0
1000 : (179.0...187.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:

1st rack travel in: 12.10
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 80...88

Testing:

Speed rpm : 200
Minimum rack travel: 7.60
Speed rpm : 300
Rack travel in mm : 5.50...5.70

CONSTANT REGULATION

Speed rpm : 300...500

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 12.40...12.60

Measurement

Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 10.90...11.10
2nd pressure hPa : 400
Rack travel in m: 11.80...12.00
3rd pressure hPa : 1000
Rack travel in m: 12.60...12.80
4th pressure hPa : 1150
Rack travel in m: 12.90...13.10
5th pressure hPa : -
Rack travel in m: 10.10...10.40

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 1050
Del.quantity cm³/ : 201.0...204.0
1000 s: (198.0...207.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1500
Speed rpm : 800
Del.quantity cm³/ : 202.0...206.0
1000 s: (199.0...209.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 129.0...131.0
1000 s: (126.0...134.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 21.08.92
Replaces : 06.92
Test oil : ISO-4113
Combination no. : 0 402 646 917X
Injection pump
Pump designation : PE6P120A32OLS7834-10
EP type number : 0 412 626 853
Governor
Governor design. : RQ300/950PA971
Governor no. : 0 421 801 543

Cust. part no. : 0180740402

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 15.20...15.40

Del.quantity cm3/ : 24.0...24.2

100 s: (23.7...24.5)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.9

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aneroid pressure h: 1200

Del.quantity : 240.0...242.0

1000 : (237.0...245.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.90
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1200
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.6

Testing:

Speed rpm : 200
Minimum rack travel: 8.50
Speed rpm : 300
Rack travel in mm : 6.30...6.90
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.35
2nd speed rpm : 950
Rack travel in m: 14.90...15.10
3rd speed rpm : 800
Rack travel in m: 15.20...15.40

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.10...10.40

Measurement

Speed 1/min : 500

1st pressure hPa : 250
Rack travel in m: 10.70...10.80
2nd pressure hPa : 600
Rack travel in m: 13.00...13.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 950
Del.quantity cm³/ : 236.0...239.0
1000 s: (233.0...242.0)

Spread cm³ : 8.00
1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.90
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 40.0...70.0
1000 s: (36.0...74.0)

Remarks:

:

Note remarks:

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.90
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1185...1215
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9

Testing:

Speed rpm : 200
Minimum rack travel: 7.70
Speed rpm : 300
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?
2nd speed rpm : 1050
Rack travel in m: 14.90...15.10
3rd speed rpm : 800
Rack travel in m: 15.50...15.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.70...14.90

Measurement

Speed 1/min : 600

1st pressure hPa : 200
Rack travel in m: 9.80...10.00
2nd pressure hPa : 600
Rack travel in m: 13.70...13.90
3rd pressure hPa : 1250
Rack travel in m: 14.80...15.00 *
4th pressure hPa : 1400
Rack travel in m: 15.20...15.40
5th pressure hPa : -
Rack travel in m: 8.90...9.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1800
Speed rpm : 1050

Del.quantity cm3/ : 235.0...238.0
1000 s: (232.0...241.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1800
Speed rpm : 800
Del.quantity cm3/ : 248.0...252.0
1000 s: (245.0...255.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.90
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 60.0...90.0
1000 s: (56.0...94.0)
Rack travel in mm : 8.90...9.20

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 31.08.92
Replaces : 06.92
Test oil : ISO-4113

Combination no. : 0 402 646 922

Injection pump
Pump designation : PE6P120A320LS7834-10
EP type number : 0 412 626 853
Governor
Governor design. : RQ300/1050PA972-2
Governor no. : 0 421 801 556

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 213.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.70...13.90

Del.quantity cm3/ : 20.9...21.1

100 s: (20.6...21.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del.quantity : 209.0...211.0

1000 : (206.0...214.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.10
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack travel: 8.50
Speed rpm : 300
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?
2nd speed rpm : 1050
Rack travel in m: 14.00...14.20
3rd speed rpm : 800
Rack travel in m: 14.10...14.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 13.70...13.90

Measurement

Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 10.60...10.70
2nd pressure hPa : 550
Rack travel in m: 13.10...13.50
3rd pressure hPa : 1100
Rack travel in m: 13.80...14.00
4th pressure hPa : 1250
Rack travel in m: 14.10...14.30
5th pressure hPa : -
Rack travel in m: 9.30...9.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 1050

Del.quantity cm3/ : 216.0...219.0
1000 s: (213.0...222.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1500
Speed rpm : 800
Del.quantity cm3/ : 219.0...223.0
1000 s: (216.0...226.0)
Spread cm3 : 8.00
1000 s: (12.0)
Speed rpm : 500
Del.quantity cm3/ : 129.0...131.0
1000 s: (126.0...134.0)
Spread cm3 : 8.00
1000 s: (12.00)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.10
Speed rpm : 1090...1105

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 31.07.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 646 924

Injection pump
Pump designation : PE6P120A320LS7837-10
EP type number : 0 412 626 855
Governor
Governor design. : RQ300/950PA971-3
Governor no. : 0 421 801 557

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 250.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.70...14.90

Del.quantity cm3/ : 23.3...23.5

100 s: (23.0...23.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.9

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 233.0...235.0

1000 : (230.0...238.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 14.50
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1080...1110
4th rack travel in: 1200
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.6

Testing:

Speed rpm : 200
Minimum rack travel: 8.20
Speed rpm : 300
Rack travel in mm : 6.30...6.90
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.40
2nd speed rpm : 950
Rack travel in m: 15.50...15.70
3rd speed rpm : 800
Rack travel in m: 15.60...15.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.70...14.90

Measurement

Speed 1/min : 600

1st pressure hPa : 200
Rack travel in m: 9.70...9.90
2nd pressure hPa : 600
Rack travel in m: 13.50...13.70
3rd pressure hPa : 1250
Rack travel in m: 14.80...15.00 *
4th pressure hPa : 1450
Rack travel in m: 15.40...15.60
5th pressure hPa : -
Rack travel in m: 9.30...9.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1800
Speed rpm : 950

Del.quantity cm3/ : 251.0...254.0
1000 s: (248.0...257.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1800
Speed rpm : 800
Del.quantity cm3/ : 250.0...254.0
1000 s: (247.0...257.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 135.0...137.0
1000 s: (132.0...140.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 14.50
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 65.0...95.0
1000 s: (61.0...99.0)
Rack travel in mm : 9.30...9.50

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 30.04.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 646 925

Injection pump
Pump designation : PE6P120A32OLS7837-10
EP type number : 0 412 626 855
Governor
Governor design. : RQV300...950PA797-20
Governor no. : 0 421 813 893

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.70...14.90

Del.quantity cm3/ : 23.3...23.5

100 s: (23.0...23.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.00...1.50

2nd speed rpm : 567
travel mm : 4.40...4.90

3rd speed rpm : 780
travel mm : 6.10...6.60

4th speed rpm : 1009
travel mm : 8.30...8.80

5th speed rpm : 1190
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1025

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
Aneroid pressure h: 1000
Del. quantity : 233.0...235.0
1000 : (230.0...238.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 120...128

Testing:

1st rack travel in: 14.50
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1085...1115
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 82...90

Testing:

Speed rpm : 200
Minimum rack travel: 7.70
Speed rpm : 300
Rack travel in mm : 5.60...6.20

CONSTANT REGULATION

Speed rpm : 300...450

TORQUE CONTROL

Dimension a mm : 0.10
2nd speed rpm : 950
Rack travel in m: 15.50...15.70
3rd speed rpm : 800
Rack travel in m: 15.60...15.80

Aneroid/Altitude

Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.70...14.90

Measurement

Speed 1/min : 600

1st pressure hPa : 200
Rack travel in m: 9.70...9.90
2nd pressure hPa : 600
Rack travel in m: 13.50...13.70
3rd pressure hPa : 1250

Rack travel in m: 14.80...15.00
4th pressure hPa : 1450
Rack travel in m: 15.40...15.60
5th pressure hPa : -
Rack travel in m: 9.30...9.50

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1700
Speed rpm : 950
Del. quantity cm3/ : 251.0...254.0
1000 s: (248.0...257.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1700
Speed rpm : 800
Del. quantity cm3/ : 250.0...254.0
1000 s: (247.0...257.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm3/ : 135.0...137.0
1000 s: (132.0...140.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.50
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm3/ : 250.0...270.0
1000 s: (246.0...274.0)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : 06.92
 Test oil : ISO-4113

Combination no. : 0 402 646 926X

Injection pump
 Pump designation : PE6P120A320LS7834-10
 EP type number : 0 412 626 853
 Governor
 Governor design. : RQV300...950PA797-19
 Governor no. : 0 421 813 901

Cust. part no. : 0180740502

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 15.20...15.40

Del. quantity cm³/ : 24.0...24.2
 100 s: (23.7...24.5)

Spread cm³ : 0.6
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 6.3...6.9
 Del. quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.00...1.50
 2nd speed rpm : 617
 travel mm : 5.00...5.50
 3rd speed rpm : 780
 travel mm : 6.10...6.60
 4th speed rpm : 1009
 travel mm : 8.30...8.80
 5th speed rpm : 1092
 travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1020
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550
Aneroid pressure h : 1200
Del.quantity : 240.0...242.0
1000 : (237.0...245.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 118...126

Testing:

1st rack travel in: 13.90
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1200
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 82...90

Testing:

Speed rpm : 200
Minimum rack travel: 8.50
Speed rpm : 300
Rack travel in mm : 6.50...6.70

CONSTANT REGULATION

Speed rpm : 300...500

TORQUE CONTROL

Dimension a mm : 0.30
2nd speed rpm : 950
Rack travel in m: 14.90...15.10
3rd speed rpm : 800
Rack travel in m: 15.20...15.40

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.10...10.40

Measurement

Speed 1/min : 500

1st pressure hPa : 250
Rack travel in m: 10.70...10.80
2nd pressure hPa : 600
Rack travel in m: 13.00...13.20

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 950
Del.quantity cm3/ : 236.0...239.0
1000 s: (233.0...242.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.90
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...230.0
1000 s: (196.0...234.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : 06.92
 Test oil : ISO-4113

Combination no. : 0 402 646 929X

Injection pump
 Pump designation : PE6P120A320LS7834-10
 EP type number : 0 412 626 853
 Governor
 Governor design. : RGV300...1050PA797
 -25
 Governor no. : 0 421 813 924

Cust. part no. : 0200744102

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 15.20...15.40

Del.quantity cm3/ : 24.0...24.2

100 s: (23.7...24.5)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 6.3...6.9
 Del.quantity cm3/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm3 : 0.6
 100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.00...1.50
 2nd speed rpm : 608
 travel mm : 4.80...5.30
 3rd speed rpm : 820
 travel mm : 5.90...6.40
 4th speed rpm : 1108
 travel mm : 8.30...8.80
 5th speed rpm : 1183
 travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1130
Rack travel in mm : 12.60...15.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550
Aneroid pressure h: 1200
Del.quantity : 240.0...242.0
1000 : (237.0...245.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 120...128

Testing:

1st rack travel in: 13.90
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 87...92

Testing:

Speed rpm : 200
Minimum rack travel: 8.70
Speed rpm : 300
Rack travel in mm : 6.50...6.70

CONSTANT REGULATION

Speed rpm : 300...500

TORQUE CONTROL

Dimension a mm : 0.30
2nd speed rpm : 1050
Rack travel in m: 14.90...15.10
3rd speed rpm : 800
Rack travel in m: 15.20...15.40

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.10...10.40

Measurement

Speed 1/min : 500

1st pressure hPa : 250
Rack travel in m: 10.70...10.80
2nd pressure hPa : 600
Rack travel in m: 13.00...13.20

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm3/ : 234.0...237.0
1000 s: (231.0...240.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.90
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...230.0
1000 s: (196.0...234.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 21.08.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 646 930X

Injection pump
Pump designation : PE6P120A320LS7834-10
EP type number : 0 412 626 853
Governor
Governor design. : RQ300/1050PA972-7
Governor no. : 0 421 801 583

Cust. part no. : 0200744002

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 15.20...15.40

Del.quantity cm3/ : 24.0...24.2

100 s: (23.7...24.5)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.9

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aneroid pressure h: 1200

Del.quantity : 240.0...242.0

1000 : (237.0...245.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.90
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.6

Testing:

Speed rpm : 200
Minimum rack travel: 8.70
Speed rpm : 300
Rack travel in mm : 6.50...6.70
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.35
2nd speed rpm : 1050
Rack travel in m: 14.90...15.10
3rd speed rpm : 800
Rack travel in m: 15.20...15.40

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.10...10.40

Measurement

Speed 1/min : 500

1st pressure hPa : 250
Rack travel in m: 10.70...10.80
2nd pressure hPa : 600
Rack travel in m: 13.00...13.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm3/ : 234.0...237.0
1000 s: (231.0...240.0)

Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.90
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 40.0...70.0
1000 s: (36.0...74.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 31.08.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 646 931

Injection pump
Pump designation : PE6P120A320LS7837-10
EP type number : 0 412 626 855
Governor
Governor design. : RQV300...1050PA797
-24
Governor no. : 0 421 813 911

Customer spec. information
Customer : MERCEDES-BENZ

* Engine : OM441 LA

1st version kW : 250.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.70...14.90

Del. quantity cm³/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.00...1.50

2nd speed rpm : 608

travel mm : 4.80...5.30

3rd speed rpm : 820

travel mm : 5.90...6.40

4th speed rpm : 1108

travel mm : 8.30...8.80

5th speed rpm : 1280

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 1000
Del.quantity : 234.0...236.0
1000 : (231.0...239.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:
1st rack travel in: 13.90
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 81...89

Testing:
Speed rpm : 200
Minimum rack travel: 7.70
Speed rpm : 300
Rack travel in mm : 5.80...6.00

CONSTANT REGULATION
Speed rpm : 300...550

TORQUE CONTROL
Dimension a mm : 0.60
2nd speed rpm : 1050
Rack travel in m: 14.90...15.10
3rd speed rpm : 800
Rack travel in m: 15.50...15.70

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.70...14.90

Measurement
Speed 1/min : 600

1st pressure hPa : 200
Rack travel in m: 9.80...10.00
2nd pressure hPa : 600
Rack travel in m: 13.70...13.90

C24

3rd pressure hPa : 1250
Rack travel in m: 14.80...15.00 *
4th pressure hPa : 1400
Rack travel in m: 15.30...15.50
5th pressure hPa : -
Rack travel in m: 8.90...9.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1800
Speed rpm : 1050
Del.quantity cm3/ : 235.0...238.0
1000 s: (232.0...241.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1800
Speed rpm : 800
Del.quantity cm3/ : 248.0...252.0
1000 s: (245.0...255.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.90
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 220.0...240.0
1000 s: (216.0...244.0)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 n
Edition : 31.08.92
Replaces : 02.92
Test oil : ISO-4113

Combination no. : 0 402 646 936

Injection pump
Pump designation : PE6P120A32ORS7230
EP type number : 0 412 626 843
Governor
Governor design. : RQV250...1000PA990K
Governor no. : 0 421 815 274

Customer-spec. information
Customer : DAF

Engine : WS 315 G

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)

Rack travel in mm : 13.80...14.80

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 980

Rack travel in mm : 14.20...14.30

Del.quantity cm3/ : 26.4...26.6

100 s: (26.1...26.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.8...6.0

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.30...1.70

2nd speed rpm : 285

travel mm : 2.10...2.50

3rd speed rpm : 685

travel mm : 6.20...6.60

4th speed rpm : 1030

travel mm : 9.60...10.00

5th speed rpm : 1145

travel mm : 11.20...11.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 12.90...15.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980

Aneroid pressure h: 1500

Del.quantity : 264.0...266.0

1000 : (261.0...269.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:
1st rack travel in: 13.20
Speed rpm : 1030...1040
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1275
Speed rpm : 0.00...1.40

LOW IDLE 1
Control lever
position degrees: ?

Testing:
Speed rpm : 100
Minimum rack travel: 6.70
Speed rpm : 250
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 310...350

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 500
Rack travel in m: 13.00...13.10
2nd speed rpm : 600
Rack travel in m: 13.00...13.20
3rd speed rpm : 750
Rack travel in m: 13.40...13.60
4th speed rpm : 825
Rack travel in m: 13.80...14.00
5th speed rpm : 980
Rack travel in m: 14.60...14.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 980
Pressure hPa : 1500
Rack travel mm : 14.20...14.30

Measurement
Speed 1/min : 980

1st pressure hPa : -
Rack travel in m: 8.80...9.00
2nd pressure hPa : 630
Rack travel in m: 11.80...11.90

3rd pressure hPa : 340
Rack travel in m: 9.60...9.80

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 500
Del.quantity cm3/ : 288.0...292.0
1000 s: (285.0...295.0)
Spread cm3 : 8.00
1000 s: (12.)
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm3/ : 162.0...164.0
1000 s: (159.0...167.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.20
Speed rpm : 1030...1040

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.10...5.30

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Testing:

1st rack travel in: 14.00
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9

Testing:

Speed rpm : 200
Minimum rack travel: 8.10
Speed rpm : 300
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?
2nd speed rpm : 1050
Rack travel in m: 15.00...15.20
3rd speed rpm : 800
Rack travel in m: 15.50...15.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.70...14.90

Measurement

Speed 1/min : 600

1st pressure hPa : 200
Rack travel in m: 9.80...10.00
2nd pressure hPa : 600
Rack travel in m: 13.70...13.90
3rd pressure hPa : 1250
Rack travel in m: 14.80...15.00 *
4th pressure hPa : 1400
Rack travel in m: 15.20...15.40
5th pressure hPa : -
Rack travel in m: 8.90...9.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1800
Speed rpm : 1050
Del.quantity cm3/ : 235.0...238.0
1000 s: (232.0...241.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1800
Speed rpm : 200
Del.quantity cm3/ : 248.0...252.0
1000 s: (245.0...255.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.00
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 220.0...240.0
1000 s: (216.0...244.0)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 q 6
 Edition : 21.08.92
 Replaces : 01.92
 Test oil : ISO-4113
 Combination no. : 0 402 646 952
 Injection pump
 Pump designation : PE6P120A32OLS7836-10
 EP type number : 0 412 626 854
 Governor
 Governor design. : RQ300/1050PA972-8
 Governor no. : 0 421 801 626

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 180.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 11.70...11.90

Del.quantity cm³/ : 16.4...16.6

100 s: (16.1...16.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.9

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 700

Del.quantity : 164.0...166.0

1000 : (161.0...169.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.60
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:

Speed rpm : 200
Minimum rack travel: 7.40
Speed rpm : 300
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 11.70...11.90

Measurement

Speed 1/min : 600

1st pressure hPa : 180
Rack travel in m: 10.40...10.60
2nd pressure hPa : 280
Rack travel in m: 11.30...11.60
3rd pressure hPa : 900
Rack travel in m: 11.80...12.00 *
4th pressure hPa : -
Rack travel in m: 10.60...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 1050
Del.quantity cm3/ : 182.0...185.0
1000 s: (179.0...188.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm3/ : 186.0...190.0
1000 s: (183.0...193.0)
Spread cm3 : 8.00
1000 s: (12.0)

002

Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.60
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 50.0...80.0
1000 s: (46.0...84.0)
Rack travel in mm : 10.30...10.70

Remarks:

:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 31.08.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 646 954

Injection pump
Pump designation : PE6P120A320LS7834-10
EP type number : 0 412 626 853
Governor
Governor design. : RQ300/1050PA993-5
Governor no. : 0 421 801 610

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 213.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,5

Test Lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.70...13.90

Del.quantity cm³/ : 20.9...21.1

100 s: (20.6...21.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del.quantity : 209.0...211.0

1000 : (206.0...214.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00

Speed rpm : 1090...1105

2nd rack travel in: 4.00

Speed rpm : 1175...1205

4th rack travel in: 1300

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.2

Testing:

Speed rpm : 200

Minimum rack travel: 7.50

Speed rpm : 300

Rack travel in mm : 6.10...6.30

Rack travel in mm : 2.00

Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?

2nd speed rpm : 1050

Rack travel in m: 14.00...14.20

3rd speed rpm : 800

Rack travel in m: 14.10...14.30

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600

Pressure hPa : 800

Rack travel mm : 13.70...13.90

Measurement

Speed 1/min : 600

1st pressure hPa : 250

Rack travel in m: 10.60...10.70

2nd pressure hPa : 550

Rack travel in m: 13.10...13.30

3rd pressure hPa : 1100

Rack travel in m: 13.80...14.00 *

4th pressure hPa : -

Rack travel in m: 9.30...9.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500

D04

Speed rpm : 1050

Del.quantity cm3/ : 216.0...219.0

1000 s: (213.0...222.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 1500

Speed rpm : 800

Del.quantity cm3/ : 219.0...223.0

1000 s: (216.0...226.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 129.0...131.0

1000 s: (126.0...134.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00

Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 210.0...230.0

1000 s: (206.0...234.0)

Remarks:

:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 31.08.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 646 959

Injection pump
Pump designation : PE6P120A320LS7836-10
EP type number : 0 412 626 854
Governor
Governor design. : RQ300/1050PA993-6
Governor no. : 0 421 801 616

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Balance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.40...12.60

Del.quantity cm3/ : 18.2...18.4

100 s: (17.9...18.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.9

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del.quantity : 182.0...184.0

1000 : (179.0...187.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.10
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:

Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 12.40...12.60

Measurement

Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 10.90...11.20
2nd pressure hPa : 400
Rack travel in m: 11.80...12.00
3rd pressure hPa : 1000
Rack travel in m: 12.60...12.80
4th pressure hPa : 1150
Rack travel in m: 12.90...13.10
5th pressure hPa : -
Rack travel in m: 10.10...10.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 1050
Del.quantity cm3/ : 201.0...204.0
1000 s: (198.0...207.0)
Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: 1400

Speed rpm : 800
Del.quantity cm3/ : 202.0...206.0
1000 s: (199.0...209.0)
Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/ : 129.0...131.0
1000 s: (126.0...134.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

:

Testing:

1st rack travel in: 11.60
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.8

Testing:

Speed rpm : 200
Minimum rack travel: 9.00
Speed rpm : 300
Rack travel in mm : 6.50...7.10
Rack travel in mm : 2.00
Speed rpm : 400...440

TORQUE CONTROL

Dimension a mm : 0.35
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.60...12.80
2nd speed rpm : 700
Rack travel in m: 13.30...13.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.10...10.40

Measurement

Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 10.80...10.90
2nd pressure hPa : 650
Rack travel in m: 12.50...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm3/ : 216.0...220.0
1000 s: (213.0...223.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.60
Speed rpm : 1090...1105

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 21.08.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 646 977

Injection pump
Pump designation : PE6P120A320LS7846
EP type number : 0 412 626 865
Governor
Governor design. : RQ300/1050PA1030-1
Governor no. : 0 421 801 641

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
(5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.90...13.10

Del.quantity cm3/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.5

Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 229.0...231.0

1000 : (226.0...234.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.60
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 4.90...5.50
Rack travel in mm : 2.00
Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : 0.35
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.60...12.80
2nd speed rpm : 700
Rack travel in m: 13.30...13.50

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.10...10.40

Measurement

Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 10.80...10.90
2nd pressure hPa : 650
Rack travel in m: 12.50...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm³/ : 216.0...220.0
1000 s: (213.0...223.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 10.80...11.00

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 21.08.92
Replaces : 04.92
Test oil : ISO-4113

Combination no. : 0 402 646 978

Injection pump
Pump designation : PE6P120A320LS7846
EP type number : 0 412 626 865
Governor
Governor design. : RQ300/950PA1031-1
Governor no. : 0 421 801 643

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.90...13.10

Del. quantity cm3/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.5

Del. quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del. quantity : 229.0...231.0

1000 : (226.0...234.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:
1st rack travel in: 11.90
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1060...1090
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.8

Testing:
Speed rpm : 200
Minimum rack travel: 9.00
Speed rpm : 300
Rack travel in mm : 6.50...7.10
Rack travel in mm : 2.00
Speed rpm : 390...430

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.10...10.40

Measurement
Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 10.80...10.90
2nd pressure hPa : 650
Rack travel in m: 12.50...12.70

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 950
Del.quantity cm3/ : 226.0...230.0
1000 s: (223.0...233.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.90
Speed rpm : 990...1005

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 21.08.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 646 979

Injection pump
Pump designation : PE6P120A32OLS7846
EP type number : 0 412 626 865
Governor
Governor design. : RQ300/950PA1032
Governor no. : 0 421 801 644

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.90...13.10

Del.quantity cm³/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.5

Del.quantity cm³/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 229.0...231.0

1000 : (226.0...234.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.90
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 4.90...5.50
Rack travel in mm : 2.00
Speed rpm : 360...400

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.10...10.40

Measurement

Speed 1/min : 500
1st pressure hPa : 300
Rack travel in m: 10.80...10.90
2nd pressure hPa : 650
Rack travel in m: 12.50...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 950
Del.quantity cm3/ : 226.0...230.0
1000 s: (223.0...233.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 10.10...10.40

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 21.08.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 646 980

Injection pump
Pump designation : PE6P120A320LS7846
EP type number : 0 412 626 865
Governor
Governor design. : RQV300...950PA1033
Governor no. : 0 421 813 990

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 668 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700
Rack travel in mm : 12.90...13.10
Del.quantity cm3/ : 22.9...23.1
100 s: (22.6...23.4)
Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 4.9...5.5
Del.quantity cm3/ : 1.0...1.6
100 s: (0.7...1.9)
Spread cm3 : 0.6
100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.10...1.50
2nd speed rpm : 567
travel mm : 4.40...5.00
3rd speed rpm : 780
travel mm : 6.00...6.60
4th speed rpm : 1010
travel mm : 8.50...8.70
5th speed rpm : 1190
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1066
Rack travel in mm : 10.60...13.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 1000
Del.quantity : 229.0...231.0
1000 : (226.0...234.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 11.90
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 76...84

Testing:
Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 4.90...5.50

CONSTANT REGULATION
Speed rpm : 300...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.10...10.40

Measurement
Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 10.80...10.90
2nd pressure hPa : 650
Rack travel in m: 12.50...12.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 950
Del.quantity cm3/ : 226.0...230.0
1000 s: (223.0...233.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.90
Speed rpm : 990...1000

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE
Edition : 21.08.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 646 982

Injection pump
Pump designation : PE6P120A320LS7848
EP type number : 0 412 626 866
Governor
Governor design. : RQV300...1050PA1034
Governor no. : 0 421 813 993

Customer-spec. information
Customer : LIEBHERR

Engine : D 9306 TI

1st version kW : 270.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
: (4.45...4.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 6- 3- 5- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 14.90...15.00

Del.quantity cm³/ : 25.9...26.1

100 s: (25.6...26.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.5...5.9

Del.quantity cm³/ : 3.0...3.6
100 s: (2.7...3.9)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 1.70...2.10

2nd speed rpm : 405
travel mm : 2.40...2.90

3rd speed rpm : 550
travel mm : 4.20...4.60

4th speed rpm : 780
travel mm : 6.30...6.90

5th speed rpm : 1118
travel mm : 10.40...10.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1185

Rack travel in mm : 12.60...15.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1500

Del.quantity : 259.0...261.0

1000 : (256.0...264.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 103...111

Testing:

1st rack travel in: 13.90
Speed rpm : 1100...1110
2nd rack travel in: 4.00
Speed rpm : 1200...1230
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 68...76

Testing:

Speed rpm : 250
Minimum rack travel: 8.90
Speed rpm : 350
Rack travel in mm : 5.60...5.80

CONSTANT REGULATION

Speed rpm : 350...420

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 700
Pressure hPa : 1500
Rack travel mm : 14.90...15.00

Measurement

Speed 1/min : 700

1st pressure hPa : -
Rack travel in m: ?
2nd pressure hPa : 950
Rack travel in m: 14.60...14.70
3rd pressure hPa : 750
Rack travel in m: 13.00...13.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700

Del. quantity cm3/ : 194.0...196.0
1000 s: (191.0...199.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.90
Speed rpm : 1100...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm3/ : 150.0...170.0
1000 s: (146.0...174.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 21.08.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 646 983
Injection pump
Pump designation : PE6P120A320LS7846
EP type number : 0 412 626 865
Governor
Governor design. : RGV300...1050PA1033-
2
Governor no. : 0 421 813 994

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700
Rack travel in mm : 12.90...13.10
Del.quantity cm3/ : 22.9...23.1
100 s: (22.6...23.4)
Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 4.9...5.5
Del.quantity cm3/ : 1.0...1.6
100 s: (0.7...1.9)
Spread cm3 : 0.6
100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 0.60...1.00
2nd speed rpm : 575
travel mm : 4.20...4.80
3rd speed rpm : 830
travel mm : 5.80...6.40
4th speed rpm : 1107
travel mm : 8.30...8.50
5th speed rpm : 1290
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1160
Rack travel in mm : 10.40...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700
Aneroid pressure h: 1000
Del.quantity : 229.0...231.0
1000 : (226.0...234.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:

1st rack travel in: 11.60
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1155...1185
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 76...84

Testing:

Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 4.90...5.50

CONSTANT REGULATION

Speed rpm : 300...400

TORQUE CONTROL

Dimension a mm : 0.30
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.60...12.80
2nd speed rpm : 850
Rack travel in m: 12.90...13.10

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.10...10.40

Measurement

Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 10.80...10.90
2nd pressure hPa : 650

D20

Rack travel in m: 12.50...12.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm3/ : 216.0...220.0
1000 s: (213.0...223.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60
Speed rpm : 1090...1100

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.08.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 993
 Injection pump
 Pump designation : PE6P120A320LS7852
 EP type number : 0 412 626 871
 Governor
 Governor design. : RQ300/1050PA1030-3
 Governor no. : 0 421 801 653

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.00...14.10

Del. quantity cm³/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del. quantity : 234.0...236.0

1000 : (231.0...239.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.90

Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9

Testing:

Speed rpm : 200
Minimum rack travel: 8.30
Speed rpm : 300
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 370...410

TORQUE CONTROL

Dimension a mm : ?
2nd speed rpm : 1050
Rack travel in m: 13.80...14.00
3rd speed rpm : 800
Rack travel in m: 14.00...14.20

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.30...10.40

Measurement

Speed 1/min : 500

1st pressure hPa : 275
Rack travel in m: 11.00...11.20
2nd pressure hPa : 580
Rack travel in m: 12.70...12.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm³/ : 223.0...227.0
1000 s: (220.0...230.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 130.0...132.0
1000 s: (127.0...135.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.90
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 60.0...90.0
1000 s: (56.0...94.0)
Rack travel in mm : 10.40...10.60

Remarks:

:

Note remarks

Testing:

1st rack travel in: 13.00
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9

Testing:

Speed rpm : 200
Minimum rack trave: 8.10
Speed rpm : 300
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.30...10.50

Measurement

Speed 1/min : 500

1st pressure hPa : 275
Rack travel in m: 11.00...11.20
2nd pressure hPa : 580
Rack travel in m: 12.70...12.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm3/ : 223.0...227.0
1000 s: (220.0...230.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 130.0...132.0
1000 s: (127.0...135.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1090...1105

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 31.08.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 646 997

Injection pump
Pump designation : PE6P120A320LS7852
EP type number : 0 412 626 871
Governor
Governor design. : RQV300...950PA1033-5
Governor no. : 0 421 814 008

Customer spec. information
Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.90...14.10

Del. quantity cm3/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del. quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.00...1.50

2nd speed rpm : 575

travel mm : 4.20...4.70

3rd speed rpm : 790

travel mm : 5.90...6.40

4th speed rpm : 1010

travel mm : 8.00...8.50

5th speed rpm : 1200

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1060

Rack travel in mm : 11.70...14.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 234.0...236.0
1000 : (231.0...239.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:

1st rack travel in: 13.00
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1200
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 80...88

Testing:

Speed rpm : 200
Minimum rack travel: 8.10
Speed rpm : 300
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 410...470

CONSTANT REGULATION

Speed rpm : 290...360

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.50...10.70

Measurement

Speed 1/min : 500

1st pressure hPa : 275
Rack travel in m: 11.20...11.30
2nd pressure hPa : 580
Rack travel in m: 12.90...13.10

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

D26

Aneroid pressure h: 1000
Speed rpm : 950
Del.quantity cm3/ : 230.0...234.0
1000 s: (227.0...237.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 133.0...135.0
1000 s: (130.0...138.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 990...1000

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.08.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 998
 Injection pump
 Pump designation : PE6P120A32OLS7852
 EP type number : 0 412 626 871
 Governor
 Governor design. : RQV300...1050PA1033
 -6
 Governor no. : 0 421 814 009

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1-

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.00...14.10

Del.quantity cm³/ : 23.4...23.6
 100 s: (23.1...23.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.6...6.2
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.50...1.00
 2nd speed rpm : 575
 travel mm : 4.30...4.80
 3rd speed rpm : 625
 travel mm : 4.80...5.30
 4th speed rpm : 830
 travel mm : 5.90...6.40
 5th speed rpm : 1190
 travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1150
 Rack travel in mm : 11.70...14.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 1000
Del.quantity : 234.0...236.0
1000 : (231.0...239.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:

1st rack travel in: 13.00
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1155...1185
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 78...86

Testing:

Speed rpm : 200
Minimum rack travel: 8.70
Speed rpm : 300
Rack travel in mm : 5.80...6.00

CONSTANT REGULATION

Speed rpm : 575...625

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.30...10.50

Measurement

Speed 1/min : 500

1st pressure hPa : 275
Rack travel in m: 11.00...11.20
2nd pressure hPa : 580
Rack travel in m: 12.70...12.90

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm3/ : 223.0...227.0
1000 s: (220.0...230.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 130.0...132.0
1000 s: (127.0...135.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1090...1105

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 21.08.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 648 817T

Injection pump
Pump designation : PE8P120A320LS7801-10
EP type number : 0 412 628 851
Governor
Governor design. : RQ300/1050PA762-16
Governor no. : 0 421 801 620

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 210.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
(5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 12.40...12.50

Del. quantity cm³/ : 16.7...16.9
100 s: (16.4...17.2)

Spread cm³ : 0.4
100 s: (0.7)

2nd speed rpm : 300.0
Rack travel in mm : 6.0...6.4
Del. quantity cm³/ : 1.3...1.9
100 s: (1.0...2.2)
Spread cm³ : 0.5
100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 500
Aneroid pressure h: 1050
Del. quantity : 167.0...169.0
1000 : (164.0...172.0)
Spread cm³ : 4.00
1000 : (7.00)

RATED SPEED

1st version

Setting point:
Speed rpm : 600

Rack travel in mm : 20.0
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.00...6.40
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.75
2nd speed rpm : 1050
3rd speed rpm : 500

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : -
Rack travel mm : 10.90...11.10

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 11.80...12.00
2nd pressure hPa : 400
Rack travel in m: 12.80...13.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1050
Speed rpm : 1050
Del.quantity cm3/ : 145.5...148.5
1000 s: (142.5...151.5)
Spread cm3 : 7.00
1000 s: (10.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm3/ : 133.0...135.0
1000 s: (130.0...138.0)
Spread cm3 : 7.00
1000 s: (10.0)

BREAKAWAY

1st version

Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 175.0...190.0
1000 s: (171.0...194.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 648 893X

Injection pump
 Pump designation : PE8P120A320LS7835-10
 EP type number : 0 412 628 853
 Governor
 Governor design. : RQ300/950PA971-2
 Governor no. : 0 421 801 548

Cust. part no. : 0200740602

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 14.60...14.80

Del.quantity cm3/ : 23.0...23.2
 100 s: (22.7...23.5)

Spread cm3 : 0.6
 100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del.quantity cm3/ : 1.6...2.2
 100 s: (1.3...2.5)

Spread cm3 : 0.6
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 750
 Aneroid pressure h: 1200

Del.quantity : 230.0...232.0
 1000 : (227.0...235.0)

Spread cm3 : 6.00
 1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1200
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.50
2nd speed rpm : 950
Rack travel in m: 14.00...14.20
3rd speed rpm : 800
Rack travel in m: 14.60...14.80

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.30...10.60

Measurement

Speed 1/min : 500

1st pressure hPa : 250
Rack travel in m: 10.90...11.00
2nd pressure hPa : 600
Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 950

Del.quantity cm3/ : 216.0...219.0
1000 s: (213.0...222.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 40.0...70.0
1000 s: (36.0...74.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 648 894X

Injection pump
 Pump designation : PE8P120A320LS7835-10
 EP type number : 0 412 628 853
 Governor
 Governor design. : RQV300...950PA797-18
 Governor no. : 0 421 813 886

Cust. part no. : 0200740702

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 14.60...14.80

Del. quantity cm3/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.9...6.5
 Del. quantity cm3/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm3 : 0.6
 100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.00...1.50
 2nd speed rpm : 567
 travel mm : 4.40...4.90
 3rd speed rpm : 780
 travel mm : 6.10...6.60
 4th speed rpm : 1009
 travel mm : 8.30...8.80
 5th speed rpm : 1092
 travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1
Speed rpm : 980
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 750
Aneroid pressure h: 1200
Del. quantity : 230.0...232.0
1000 : (227.0...235.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 122...130

Testing:
1st rack travel in: 13.00
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1200
Speed rpm : 0.00...1.40

LOW IDLE 1
Control lever
position degrees: 80...88

Testing:
Speed rpm : 200
Minimum rack trave: 7.50
Speed rpm : 300
Rack travel in mm : 6.10...6.30

CONSTANT REGULATION
Speed rpm : 250...360

TORQUE CONTROL
Dimension a mm : 0.50
2nd speed rpm : 950
Rack travel in m: 14.00...14.20
3rd speed rpm : 800
Rack travel in m: 14.60...14.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.30...10.60

Measurement
Speed 1/min : 500

EO6

1st pressure hPa : 250
Rack travel in m: 10.90...11.00
2nd pressure hPa : 600
Rack travel in m: 13.20...13.40

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 950
Del. quantity cm³/ : 216.0...219.0
1000 s: (213.0...222.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 200.0...230.0
1000 s: (196.0...234.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 31.08.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 648 895X

Injection pump
Pump designation : PE8P120A320LS7835-10
EP type number : 0 412 628 853
Governor
Governor design. : RQ300/1050PA972-1
Governor no. : 0 421 801 545

Cust. part no. : 0180742102

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 14.60...14.80

Del.quantity cm3/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.9...6.5
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -2
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 750
Aneroid pressure h: 1200
Del.quantity : 230.0...232.0
1000 : (227.0...235.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 13.00
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.50
2nd speed rpm : 1050
Rack travel in m: 13.90...14.10
3rd speed rpm : 800
Rack travel in m: 14.60...14.80

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.30...10.60

Measurement

Speed 1/min : 500

1st pressure hPa : 250
Rack travel in m: 10.90...11.00
2nd pressure hPa : 600
Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050

Del.quantity cm³/ : 214.0...217.0
1000 s: (211.0...220.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 131.0...133.0
1000 s: (128.0...136.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 40.0...70.0
1000 s: (36.0...74.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 31.07.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 648 900

Injection pump
Pump designation : PE8P120A320LS7840-10
EP type number : 0 412 628 856
Governor
Governor design. : RQ300/1050PA972-4
Governor no. : 0 421 801 560

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 250.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.30...13.50

Del. quantity cm3/ : 20.6...20.8
100 s: (20.3...21.1)

Spread cm3 : 0.6
100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 6.0...6.6
Del. quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -2
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 900
Del. quantity : 206.0...208.0
1000 : (203.0...211.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Setting point:
Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.90

Speed rpm : 1090...1105

2nd rack travel in: 4.00

Speed rpm : 1160...1190

4th rack travel in: 1250

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.5

Testing:

Speed rpm : 200

Minimum rack travel: 7.90

Speed rpm : 300

Rack travel in mm : 6.20...6.80

Rack travel in mm : 2.00

Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.60

2nd speed rpm : 1050

Rack travel in m: 12.90...13.10

3rd speed rpm : 800

Rack travel in m: 14.20...14.40

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600

Pressure hPa : 900

Rack travel mm : 13.30...13.60

Measurement

Speed 1/min : 600

1st pressure hPa : 300

Rack travel in m: 11.10...11.30

2nd pressure hPa : 650

Rack travel in m: 12.80...13.00

3rd pressure hPa : 1050

Rack travel in m: 13.40...13.50

4th pressure hPa : 1250

Rack travel in m: 13.70...13.90

5th pressure hPa : -

Rack travel in m: 10.50...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500

Speed rpm : 1050

Del.quantity cm3/ : 194.0...197.0

1000 s: (191.0...200.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 1500

Speed rpm : 800

Del.quantity cm3/ : 220.0...224.0

1000 s: (217.0...227.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 123.0...125.0

1000 s: (120.0...128.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90

Speed rpm : 1090...1105

Remarks:

:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 31.08.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 648 902

Injection pump
Pump designation : PE8P120A320LS7839-10
EP type number : 0 412 628 855
Governor
Governor design. : RQ300/1050PA972-5
Governor no. : 0 421 801 564

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.90...15.10

Del.quantity cm3/ : 25.6...25.8
100 s: (25.3...26.1)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.6

Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1050

Del.quantity : 256.0...258.0
1000 : (253.0...261.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 15.20
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.3

Testing:

Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 6.20...6.40
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?
2nd speed rpm : 1050
Rack travel in m: 16.20...16.40
3rd speed rpm : 800
Rack travel in m: 16.40...16.60

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 1050
Rack travel mm : 14.90...15.00

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 10.00...10.20
2nd pressure hPa : 800
Rack travel in m: 13.80...14.00
3rd pressure hPa : 1200
Rack travel in m: 15.00...15.10
4th pressure hPa : 1500
Rack travel in m: 15.60...15.80
5th pressure hPa : -
Rack travel in m: 9.10...9.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 2000
Speed rpm : 1050

Del.quantity cm3/ : 271.0...274.0
1000 s: (268.0...277.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 2000
Speed rpm : 800
Del.quantity cm3/ : 276.0...280.0
1000 s: (273.0...283.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 133.0...135.0
1000 s: (130.0...138.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 15.20
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 9.10...9.40

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 31.08.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 648 906

Injection pump
Pump designation : PE8P120A320LS7838-10
EP type number : 0 412 628 854
Governor
Governor design. : RQ300/1050PA972-6
Governor no. : 0 421 801 569

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 320.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.10...14.30

Del.quantity cm³/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.2...6.8

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 229.0...231.0

1000 : (226.0...234.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.50
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

Speed rpm : 300...500

TORQUE CONTROL

Dimension a mm : ?
2nd speed rpm : 1050
Rack travel in m: 14.50...14.70
3rd speed rpm : 800
Rack travel in m: 15.00...15.20

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.10...14.30

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 10.00...10.20
2nd pressure hPa : 700
Rack travel in m: 13.00...13.20
3rd pressure hPa : 1200
Rack travel in m: 14.30...14.50
4th pressure hPa : 1350
Rack travel in m: 14.70...14.90
5th pressure hPa : -
Rack travel in m: 9.00...9.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600

E14

Speed rpm : 1050
Del.quantity cm3/ : 226.0...229.0
1000 s: (223.0...232.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 800
Del.quantity cm3/ : 239.0...243.0
1000 s: (236.0...246.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 135.0...137.0
1000 s: (132.0...140.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.50

Speed rpm : 1090...1105

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.08.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 911
 Injection pump
 Pump designation : PE8P120A32OLS7839-10
 EP type number : 0 412 628 855
 Governor
 Governor design. : RQV300...1050PA797
 -27
 Governor no. : 0 421 813 916

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 638 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.90...15.10

Del.quantity cm3/ : 25.6...25.8

100 s: (25.3...26.1)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.6

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.00...1.50

2nd speed rpm : 558

travel mm : 4.30...4.80

3rd speed rpm : 820

travel mm : 5.90...6.40

4th speed rpm : 1108

travel mm : 8.30...8.80

5th speed rpm : 1183

travel mm : 8.30...8.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
 Aneroid pressure h: 1050
 Del.quantity : 256.0...258.0
 1000 : (253.0...261.0)
 Spread cm3 : 6.00
 1000 : (9.00)

RATED SPEED

1st version

Control lever
 position degrees: 118...126

Testing:

1st rack travel in: 15.20
 Speed rpm : 1090...1100
 2nd rack travel in: 4.00
 Speed rpm : 1175...1205
 4th rack travel in: 1250
 Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
 position degrees: 76...84

Testing:

Speed rpm : 200
 Minimum rack travel: 6.30
 Speed rpm : 300
 Rack travel in mm : 6.20...6.40

CONSTANT REGULATION

Speed rpm : 300...450

TORQUE CONTROL

Dimension a mm : 0.20
 2nd speed rpm : 1050
 Rack travel in m: 16.20...16.40
 3rd speed rpm : 800
 Rack travel in m: 16.40...16.60

Aneroid/Altitude Compensator Test

1st version

Setting
 Speed rpm : 600
 Pressure hPa : 1050
 Rack travel mm : 14.90...15.10

Measurement

Speed 1/min : 600

1st pressure hPa : 350
 Rack travel in m: 10.00...10.20
 2nd pressure hPa : 800

E16

Rack travel in m: 13.80...14.00
 3rd pressure hPa : 1200
 Rack travel in m: 15.00...15.10
 4th pressure hPa : 1500
 Rack travel in m: 15.60...15.80
 5th pressure hPa : -
 Rack travel in m: 9.10...9.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 2000
 Speed rpm : 1050
 Del.quantity cm3/ : 271.0...274.0
 1000 s: (268.0...277.0)
 Spread cm3 : 8.00
 1000 s: (12.0)
 Aneroid pressure h: 2000
 Speed rpm : 800
 Del.quantity cm3/ : 276.0...280.0
 1000 s: (273.0...283.0)
 Spread cm3 : 8.00
 1000 s: (12.0)
 Aneroid pressure h: -
 Speed rpm : 500
 Del.quantity cm3/ : 133.0...135.0
 1000 s: (130.0...138.0)
 Spread cm3 : 8.00
 1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
 full load rack tr: 15.20
 Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
 Del.quantity cm3/ : 275.0...295.0
 1000 s: (271.0...299.0)

Remarks:

* Increase in control-rod travel with
 respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.08.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 648 914X

Injection pump
 Pump designation : PE8P120A320LS7835-10
 EP type number : 0 412 628 853
 Governor
 Governor design. : RQV300...1050PA797
 -30
 Governor no. : 0 421 813 921

Cust. part no. : 0180742202

Customer-spec. information
 Customer : MB-NFZ

Engine : OM402 A

1st version kW : 280.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 Firing order : 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 14.60...14.80

Del.quantity cm3/ : 23.0...23.2
 100 s: (22.7...23.5)

Spread cm3 : 0.6
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.9...6.5
 Del.quantity cm3/ : 1.6...2.2
 100 s: (1.3...2.5)

Spread cm3 : 0.6
 100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.00...1.50
 2nd speed rpm : 608
 travel mm : 4.80...5.30
 3rd speed rpm : 820
 travel mm : 5.90...6.40
 4th speed rpm : 1108
 travel mm : 8.10...8.60
 5th speed rpm : 1190
 travel mm : 9.80...10.30

GUIDE SLEEVE POSITION
 Control-lever position

Degree: -1
Speed rpm : 1130
Rack travel in mm : 12.60...15.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 750
Aneroid pressure h: 1200
Del. quantity : 230.0...232.0
1000 : (227.0...235.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:
1st rack travel in: 13.00
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.40

LOW IDLE 1
Control lever
position degrees: 82...90

Testing:
Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 6.10...6.30

CONSTANT REGULATION
Speed rpm : 300...500

TORQUE CONTROL
Dimension a mm : 0.60
2nd speed rpm : 1050
Rack travel in m: 13.90...14.10
3rd speed rpm : 800
Rack travel in m: 14.60...14.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.30...10.60

Measurement
Speed 1/min : 500

E18

1st pressure hPa : 250
Rack travel in m: 10.90...11.00
2nd pressure hPa : 600
Rack travel in m: 13.20...13.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 1050
Del. quantity cm3/ : 214.0...217.0
1000 s: (211.0...220.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm3/ : 131.0...133.0
1000 s: (128.0...136.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm3/ : 200.0...230.0
1000 s: (196.0...234.0)

Remarks:

:

Note remarks

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x1000

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.50
2nd speed rpm : 1050
Rack travel in m: 13.90...14.10
3rd speed rpm : 800
Rack travel in m: 14.60...14.80

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.30...10.60

Measurement

Speed 1/min : 500

1st pressure hPa : 250
Rack travel in m: 10.90...11.00
2nd pressure hPa : 600
Rack travel in m: 13.20...13.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm3/ : 214.0...217.0
1000 s: (211.0...220.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 131.0...133.0
1000 s: (128.0...136.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...230.0
1000 s: (196.0...234.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 14,5 e1
Edition : 21.08.92
Replaces : 05.91
Test oil : ISO-4113

Combination no. : 0 402 648 916

Injection pump
Pump designation : PE8P120A520LS7818-1
EP type number : 0 412 628 857
Governor
Governor design. : RGV250...1150PA902
Governor no. : 0 421 813 720

Customer-spec. information
Customer : MAN

Engine : D2848LXE 40

1st version kW : 500.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
: (4.45...4.65)
Rack travel in mm : 9.00...12.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1150
Rack travel in mm : 14.20...14.30
Del. quantity cm3/ : 31.8...32.0
100 s: (31.5...32.3)
Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 500
Rack travel in mm : 8.9...9.1
Del. quantity cm3/ : 14.9...15.1
100 s: (14.6...15.4)
Spread cm3 : 0.5
100 s: (0.9)
3rd speed rpm : 250
Rack travel in mm : 7.30...7.50
Del. quantity cm3/ : 5.2...6.0 *
100 s: (-)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 1.40...1.60
2nd speed rpm : 450
travel mm : 3.40...4.00
3rd speed rpm : 850
travel mm : 6.30...6.90
4th speed rpm : 1150
travel mm : 9.40...9.60
5th speed rpm : 1450
travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1250
Rack travel in mm : 11.70...14.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
 Aneroid pressure h: 1300
 Del.quantity : 318.0...320.0
 1000 : (315.0...323.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version

Control lever
 position degrees: 118...126

Testing:

1st rack travel in: 13.20
 Speed rpm : 1190...1200
 2nd rack travel in: 4.00
 Speed rpm : 1310...1340
 4th rack travel in: 1450
 Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
 position degrees: 80...88

Testing:

Speed rpm : 100
 Minimum rack travel: 8.90
 Speed rpm : 250
 Rack travel in mm : 7.30...7.50
 Rack travel in mm : 2.00
 Speed rpm : 430...490

Aneroid/Altitude Compensator Test

1st version

Setting
 Speed rpm : 500
 Pressure hPa : 1300
 Rack travel mm : 14.20...14.30

Measurement

Speed 1/min : 500

1st pressure hPa : -
 Rack travel in m: 8.90...9.10
 2nd pressure hPa : 100
 Rack travel in m: 9.30...9.40
 3rd pressure hPa : 470
 Rack travel in m: 12.30...12.60

START CUT-OUT

Speed 1/min : 200 (220)

E22

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
 Speed rpm : 500
 Del.quantity cm³/ : 149.0...151.0
 1000 s: (146.0...154.0)

BREAKAWAY

1st version

1mm rack travel less than
 full load rack tr: 13.20
 Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
 Del.quantity cm³/ : 100.0...120.0 *
 1000 s: (-)

Speed rpm : 100
 Del.quantity cm³/ : 0 **
 1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 500
 Rack travel in mm : 0.00...7.00
 Del.quantity cm³/ : 0 **
 1000 s: (-)

2nd version

Speed rpm : 500
 Rack travel in mm : 0.00...7.50
 Del.quantity cm³/ : < 50.0 **
 1000 s: (-)

3rd version

Speed rpm : 500
 Rack travel in mm : 8.10...8.30
 Del.quantity cm³/ : 125.0...**
 1000 s: (-)

LOW IDLE

Speed rpm : 250
 Rack travel in mm : 7.30...7.50
 Del.quantity cm³/ : 52.0...60.0 *
 1000 s: (-)

Remarks:

: MAN-NR. 3-7150

* applies to cylinders 2, 3, 4 and 8

** applies for cylinders 1, 5, 6, and 7

APPLICATION

Ship

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 31.08.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 648 917

Injection pump
Pump designation : PE8P120A320LS7839-10
EP type number : 0 412 628 855
Governor
Governor design. : RQ300/1050PA993-3
Governor no. : 0 421 801 601

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.90...15.10

Del.quantity cm3/ : 25.6...25.8

100 s: (25.3...26.1)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.6

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1050

Del.quantity : 256.0...258.0

1000 : (253.0...261.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 15.20
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.3

Testing:

Speed rpm : 200
Minimum rack travel: 7.20
Speed rpm : 300
Rack travel in mm : 6.20...6.40
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?
2nd speed rpm : 1050
Rack travel in m: 16.20...16.40
3rd speed rpm : 800
Rack travel in m: 16.40...16.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1050
Rack travel mm : 14.90...15.10

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 10.00...10.20
2nd pressure hPa : 800
Rack travel in m: 13.80...14.00
3rd pressure hPa : 1200
Rack travel in m: 15.00...15.10 *
4th pressure hPa : 1500
Rack travel in m: 15.60...15.80
5th pressure hPa : -
Rack travel in m: 9.10...9.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 2000
Speed rpm : 1050
Del.quantity cm3/ : 271.0...274.0
1000 s: (268.0...277.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 2000
Speed rpm : 800
Del.quantity cm3/ : 276.0...280.0
1000 s: (273.0...283.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 133.0...135.0
1000 s: (130.0...138.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 15.20
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 275.0...295.0
1000 s: (271.0...299.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

Speed rpm : 1020

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.50
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

Speed rpm : 300...500

TORQUE CONTROL

Dimension a mm : ?
2nd speed rpm : 1050
Rack travel in m: 14.50...14.70
3rd speed rpm : 800
Rack travel in m: 15.00...15.20

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.10...14.30

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 10.00...10.20
2nd pressure hPa : 700
Rack travel in m: 13.00...13.20
3rd pressure hPa : 1200
Rack travel in m: 14.30...14.50
4th pressure hPa : 1350
Rack travel in m: 14.70...14.90
5th pressure hPa : -
Rack travel in m: 9.00...9.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

E27

1st version

Aneroid pressure h: 1600
Speed rpm : 1050
Del.quantity cm3/ : 226.0...229.0
1000 s: (223.0...232.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 800
Del.quantity cm3/ : 239.0...243.0
1000 s: (236.0...246.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 135.0...137.0
1000 s: (132.0...140.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack travel: 13.50
Speed rpm : 1090...1105

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 u 5
 Edition : 21.08.92
 Replaces : 01.92
 Test oil : ISO-4113
 Combination no. : 0 402 648 927
 Injection pump
 Pump designation : PE8P120A320LS7840
 EP type number : 0 412 628 850
 Governor
 Governor design. : RQV300...1050PA797
 -36
 Governor no. : 0 421 813 984

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 250.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.70...12.90

Del.quantity cm3/ : 19.1...19.3

100 s: (18.8...19.6)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 600.0

Rack travel in mm : 4.2...4.8

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.10...1.60

2nd speed rpm : 470
 travel mm : 3.00...3.50

3rd speed rpm : 830
 travel mm : 5.90...6.40

4th speed rpm : 1110
 travel mm : 8.20...8.70

5th speed rpm : 1183
 travel mm : 9.60...10.30

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
 Aneroid pressure h: 700
 Del.quantity : 191.0...193.0
 1000 : (188.0...196.0)
 Spread cm3 : 6.00
 1000 : (9.00)

RATED SPEED

1st version

Control lever
 position degrees: 118...126

Testing:

1st rack travel in: 12.50
 Speed rpm : 1090...1100
 2nd rack travel in: 4.00
 Speed rpm : 1150...1180
 4th rack travel in: 1250
 Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
 position degrees: 82...90

Testing:

Speed rpm : 200
 Minimum rack trave: 7.90
 Speed rpm : 300
 Rack travel in mm : 6.20...6.80
 Rack travel in mm : 2.00
 Speed rpm : 380...420

CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude
 Compensator Test

1st version

Setting
 Speed rpm : 600
 Pressure hPa : 700
 Rack travel mm : 12.70...12.90

Measurement

Speed 1/min : 600

1st pressure hPa : 250
 Rack travel in m: 11.10...11.30
 2nd pressure hPa : 440
 Rack travel in m: 12.10...12.30
 3rd pressure hPa : 900
 Rack travel in m: 12.90...13.10
 4th pressure hPa : -
 Rack travel in m: 10.70...11.00

F01

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1300
 Speed rpm : 1050
 Del.quantity cm3/ : 210.0...213.0
 1000 s: (207.0...216.0)
 Spread cm3 : 8.00
 1000 s: (12.0)
 Aneroid pressure h: 1300
 Speed rpm : 800
 Del.quantity cm3/ : 212.0...216.0
 1000 s: (209.0...219.0)
 Spread cm3 : 8.00
 1000 s: (12.0)
 Aneroid pressure h: -
 Speed rpm : 500
 Del.quantity cm3/ : 132.0...134.0
 1000 s: (129.0...137.0)
 Spread cm3 : 8.00
 1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50
 Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
 Del.quantity cm3/ : 180.0...200.0
 1000 s: (176.0...204.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.08.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 928
 Injection pump
 Pump designation : PE8P120A320LS7847
 EP type number : 0 412 628 863
 Governor
 Governor design. : RQ300/1050PA1030
 Governor no. : 0 421 801 640

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 13.40...13.50
 Del. quantity cm3/ : 23.3...23.5
 100 s: (23.0...23.8)
 Spread cm3 : 0.6
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.2...5.8
 Del. quantity cm3/ : 1.0...1.6
 100 s: (0.7...1.9)
 Spread cm3 : 0.6
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 1200
 Del. quantity : 233.0...235.0
 1000 : (230.0...238.0)
 Spread cm3 : 6.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.80
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:

Speed rpm : 200
Minimum rack travel: 7.60
Speed rpm : 300
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : 0.50
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.80...13.00
2nd speed rpm : 800
Rack travel in m: 13.40...13.60

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.50...10.70

Measurement

Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 11.10...11.20
2nd pressure hPa : 650
Rack travel in m: 12.60...12.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm3/ : 206.0...209.0
1000 s: (203.0...212.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 131.0...133.0
1000 s: (128.0...136.0)

Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 45.0...65.0
1000 s: (41.0...69.0)
Rack travel in mm : 10.50...10.70

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 929
 Injection pump
 Pump designation : PE8P120A32ULS7847
 EP type number : 0 412 628 863
 Governor
 Governor design. : RQV300...950PA1033-1
 Governor no. : 0 421 813 991

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 13.50...13.60
 Del.quantity cm3/ : 23.3...23.5
 100 s : (23.0...23.8)

Spread cm3 : 0.6
 100 s : (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.2...5.8
 Del.quantity cm3/ : 1.0...1.6
 100 s : (0.7...1.9)
 Spread cm3 : 0.8
 100 s : (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.10...1.50
 2nd speed rpm : 567
 travel mm : 4.40...5.00
 3rd speed rpm : 780
 travel mm : 6.00...6.60
 4th speed rpm : 1010
 travel mm : 8.50...8.70
 5th speed rpm : 1190
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1080
 Rack travel in mm : 10.70...13.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700

Aneroid pressure h: 1200
Del.quantity : 233.0...235.0
1000 : (230.0...238.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:
1st rack travel in: 12.00
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1080...1110
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 82...90

Testing:
Speed rpm : 200
Minimum rack trave: 9.60
Speed rpm : 300
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION
Speed rpm : 300...450

TORQUE CONTROL
Dimension a mm : 0.50
Torque control curve - 1st version
1st speed rpm : 950
Rack travel in m: 12.90...13.10
2nd speed rpm : 825
Rack travel in m: 13.20...13.40
3rd speed rpm : 700
Rack travel in m: 13.50...13.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.50...10.70

Measurement
Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 11.10...11.20
2nd pressure hPa : 650
Rack travel in m: 12.60...12.80

F05

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 950
Del.quantity cm3/ : 214.0...218.0
1000 s: (211.0...221.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.00
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 250.0...290.0
1000 s: (246.0...294.0)
Rack travel in mm : 10.50...10.70

Remarks:

:

Note remarks

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

Setting point:
Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.80

Speed rpm : 1090...1105

2nd rack travel in: 4.00

Speed rpm : 1170...1200

4th rack travel in: 1350

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 5.5

Testing:

Speed rpm : 200

Minimum rack travel: 7.60

Speed rpm : 300

Rack travel in mm : 5.40...5.60

Rack travel in mm : 2.00

Speed rpm : 370...410

TORQUE CONTROL

Dimension a mm : 0.50

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : -

Rack travel mm : 10.50...10.70

Measurement

Speed 1/min : 500

1st pressure hPa : 300

Rack travel in m: 11.10...11.20

2nd pressure hPa : 650

Rack travel in m: 12.60...12.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 1050

Del.quantity cm3/ : 206.0...209.0

1000 s: (203.0...212.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 131.0...133.0

1000 s: (128.0...136.0)

Spread

cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80

Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 250.0...290.0

1000 s: (246.0...294.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 21.08.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 648 931

Injection pump
Pump designation : PE8P120A320LS7847
EP type number : 0 412 628 863
Governor
Governor design. : RQ300/950PA1032-1
Governor no. : 0 421 801 646

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.50...13.60

Del.quantity cm3/ : 23.3...23.5
100 s: (23.0...23.8)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.2...5.8
Del.quantity cm3/ : 1.0...1.6
100 s: (0.7...1.9)
Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -2

Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 1200
Del.quantity : 233.0...235.0
1000 : (230.0...238.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:
Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.00
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:

Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 360...400

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.50...10.70

Measurement

Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 11.10...11.20
2nd pressure hPa : 650
Rack travel in m: 12.60...12.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 950
Del.quantity cm3/ : 214.0...218.0
1000 s: (211.0...221.0)
Spread cm3 : 8.0
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

F09

1st version

1mm rack travel less than

full load rack tr: 12.00
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 45.0...65.0
1000 s: (41.0...69.0)
Rack travel in mm : 10.50...10.70

Remarks:

:

Note remarks

TEST BENCH REQUIREMENTS

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

Speed rpm : 990...1005

2nd rack travel in: 4.00
Speed rpm : 1050...1080
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 200
Minimum rack travel: 8.70
Speed rpm : 300
Rack travel in mm : 6.20...6.80
Rack travel in mm : 2.00
Speed rpm : 390...430

TORQUE CONTROL

Dimension a mm : 0.55
Torque control curve - 1st version
1st speed rpm : 950
Rack travel in m: 12.90...13.10
2nd speed rpm : 800
Rack travel in m: 13.40...13.60

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.50...10.70

Measurement

Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 11.10...11.20
2nd pressure hPa : 650
Rack travel in m: 12.60...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 950
Del.quantity cm3/ : 214.0...218.0
1000 s: (211.0...221.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 10.50...10.70

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 21.08.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 648 935

Injection pump
Pump designation : PE8P120A320LS7840-10
EP type number : 0 412 628 856
Governor
Governor design. : RQV300...950PA1033-3
Governor no. : 0 421 813 997

Customer-spec. information:
Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 250.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

: Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.30...13.40

Del. quantity cm3/ : 20.9...21.1
100 s: (20.6...21.4)

Spread cm3 : 0.6
100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 6.2...6.8
Del. quantity cm3/ : 1.0...1.6
100 s: (0.7...1.9)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.10...1.50
2nd speed rpm : 567
travel mm : 4.40...5.00
3rd speed rpm : 780
travel mm : 6.00...6.60
4th speed rpm : 1010
travel mm : 8.50...8.70
5th speed rpm : 1190
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1080
Rack travel in mm : 11.00...13.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700

Aneroid pressure h: 1200
Del.quantity : 209.0...211.0
1000 : (206.0...214.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:
1st rack travel in: 12.30
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 82...90
Rack travel in mm : 6.5

Testing:
Speed rpm : 200
Minimum rack trave: 8.40
Speed rpm : 300
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION
Speed rpm : 300...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.00...11.30

Measurement
Speed 1/min : 500

1st pressure hPa : 350
Rack travel in m: 11.30...11.50
2nd pressure hPa : 700
Rack travel in m: 12.60...12.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

F13

Aneroid pressure h: 1200
Speed rpm : 950
Del.quantity cm3/ : 208.0...214.0
1000 s: (205.0...217.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 136.0...138.0
1000 s: (133.0...141.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.30
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 220.0...240.0
1000 s: (216.0...244.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 21.08.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 648 936
Injection pump
Pump designation : PE8P120A320LS7840-10
EP type number : 0 412 628 856
Governor
Governor design. : RQ300/950PA1032-2
Governor no. : 0 421 801 650

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 250.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 700
Rack travel in mm : 13.30...13.40
Del. quantity cm3/ : 20.9...21.1
100 s: (20.6...21.4)
Spread cm3 : 0.6
100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 6.2...6.8
Del. quantity cm3/ : 1.0...1.6
100 s: (0.7...1.9)
Spread cm3 : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -2
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 1200
Del. quantity : 209.0...211.0
1000 : (206.0...214.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.30
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 200
Minimum rack travel: 8.80
Speed rpm : 300
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.00...11.30

Measurement

Speed 1/min : 500

1st pressure hPa : 350
Rack travel in m: 11.30...11.50
2nd pressure hPa : 700
Rack travel in m: 12.60...12.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 950
Del.quantity cm3/ : 208.0...214.0
1000 s: (205.0...217.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 136.0...138.0
1000 s: (133.0...141.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.30
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 55.0...75.0
1000 s: (51.0...79.0)
Rack travel in mm : 11.00...11.40

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 31.08.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 648 940

Injection pump
Pump designation : PE8P120/320LS7847
EP type number : 0 412 628 863
Governor
Governor design. : RQ300/950PA1032-4
Governor no. : 0 421 801 661

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 21.5...21.7

100 s: (21.2...22.0)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.2...5.8
Del.quantity cm3/ : 1.0...1.6
100 s: (0.7...1.9)

Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -2

Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 950
Aneroid pressure h: 1200
Del.quantity : 215.0...217.0
1000 : (212.0...220.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:
Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.00

Speed rpm : 990...1005

2nd rack travel in: 4.00

Speed rpm : 1065...1095

4th rack travel in: 1350

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 5.5

Testing:

Speed rpm : 200

Minimum rack travel: 8.80

Speed rpm : 300

Rack travel in mm : 5.40...5.60

Rack travel in mm : 2.00

Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 13.00...13.10

2nd speed rpm : 600

Rack travel in m: 13.90...14.10

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : -

Rack travel mm : 10.40...10.70

Measurement

Speed 1/min : 500

1st pressure hPa : 350

Rack travel in m: 11.00...11.10

2nd pressure hPa : 750

Rack travel in m: 12.80...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 600

Del.quantity cm3/ : 227.0...231.0

1000 s: (224.0...234.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 134.0...136.0

1000 s: (131.0...139.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00

Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 45.0...65.0

1000 s: (41.0...69.0)

Rack travel in mm : 10.40...10.70

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 31.08.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 648 941

Injection pump
Pump designation : PE8P120A320LS7847
EP type number : 0 412 628 863
Governor
Governor design. : RQV300...950PA1033-7
Governor no. : 0 421 814 019

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 3

BASIC SETTING

1st speed rpm : 950
Rack travel in mm : 13.00...13.10
Del.quantity cm3/ : 21.5...21.7
100 s : (21.2...22.0)

Spread cm3 : 0.6
100 s : (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.2...5.8
Del.quantity cm3/ : 1.0...1.6
100 s : (0.7...1.9)
Spread cm3 : 0.6
100 s : (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL
1st speed rpm : 300
travel mm : 1.10...1.50
2nd speed rpm : 567
travel mm : 4.40...5.00
3rd speed rpm : 780
travel mm : 6.00...6.60
4th speed rpm : 1010
travel mm : 8.50...8.70
5th speed rpm : 1190
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 1050
Rack travel in mm : 10.70...13.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 950

Aneroid pressure h: 1200
Del.quantity : 215.0...217.0
1000 : (212.0...220.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:
1st rack travel in: 12.00
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1055...1085
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 82...90

Testing:
Speed rpm : 200
Minimum rack trave: 9.60
Speed rpm : 300
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION
Speed rpm : 300...390

TORQUE CONTROL
Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 950
Rack travel in m: 13.00...13.10
2nd speed rpm : 600
Rack travel in m: 13.40...13.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.40...10.70

Measurement
Speed 1/min : 500

1st pressure hPa : 350
Rack travel in m: 11.00...11.10
2nd pressure hPa : 750
Rack travel in m: 12.80...13.00

FUEL DELIVERY CHARACTERISTICS

F19

1st version
Aneroid pressure h: 1200
Speed rpm : 600
Del.quantity cm3/ : 227.0...231.0
1000 s: (224.0...234.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.00
Speed rpm : 990...1000

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 31.08.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 648 942

Injection pump
Pump designation : PE8P120A320LS7847
EP type number : 0 412 628 863
Governor
Governor design. : RQ300/950PA1031-6
Governor no. : 0 421 801 662

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 21.5...21.7
100 s: (21.2...22.0)

Spread cm3 : 0.6
100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.2...5.8
Del.quantity cm3/ : 1.0...1.6
100 s: (0.7...1.9)
Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -2
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 950
Aneroid pressure h: 1200
Del.quantity : 215.0...217.0
1000 : (212.0...220.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Setting point:
Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.00

Speed rpm : 990...1005

2nd rack travel in: 4.00

Speed rpm : 1050...1080

4th rack travel in: 1350

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 5.5

Testing:

Speed rpm : 200

Minimum rack travel: 8.80

Speed rpm : 300

Rack travel in mm : 5.40...5.60

Rack travel in mm : 2.00

Speed rpm : 390...430

TORQUE CONTROL

Dimension a mm : 0.35

Torque control curve - 1st version

1st speed rpm : 950

Rack travel in m: 13.00...13.10

2nd speed rpm : 600

Rack travel in m: 13.90...14.10

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : -

Rack travel mm : 10.40...10.70

Measurement

Speed 1/min : 500

1st pressure hPa : 350

Rack travel in m: 11.00...11.10

2nd pressure hPa : 750

Rack travel in m: 12.80...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 600

Del.quantity cm3/ : 227.0...231.0

1000 s: (224.0...234.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 134.0...136.0

1000 s: (131.0...139.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00

Speed rpm : 990...1005

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 676 812
 Injection pump
 Pump designation : PE6P120A320LS7808-3
 EP type number : 0 412 626 870
 Governor
 Governor design. : RSV425...1050POA535-6
 Governor no. : 0 421 833 378
 Customer-spec. information
 Customer : MERCEDES-BENZ
 Engine : OM 441 LA
 1st version kW : 249.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

F22

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600
 Rack travel in mm : 14.20...14.40
 Del.quantity cm³/ : 22.8...23.0
 100 s: (22.5...23.3)
 Spread cm³ : 0.6
 100 s: (0.9)
 2nd speed rpm : 425.0
 Rack travel in mm : 4.7...5.3
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 600
 Aneroid pressure h: 900
 Del.quantity : 228.0...230.0
 1000 : (225.0...233.0)
 Spread cm³ : 6.00
 1000 : (9.00)

RATED SPEED

1st version
 Control lever
 position degrees: 92...100

Testing:

1st rack travel in: 14.00
Speed rpm : 1070...1080
2nd rack travel in: 4.00
Speed rpm : 1135...1153
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 69...77
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 425
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 430...490

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

2nd speed rpm : 1030
Rack travel in m: 14.90...15.10
3rd speed rpm : 800
Rack travel in m: 15.30...15.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 14.20...14.40

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 10.10...10.30
2nd pressure hPa : 600
Rack travel in m: 13.40...13.60
3rd pressure hPa : 1300
Rack travel in m: 14.90...15.10
4th pressure hPa : -
Rack travel in m: 9.50...9.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 1030

Del.quantity cm3/ : 245.0...247.0
1000 s: (242.0...250.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1500
Speed rpm : 800
Del.quantity cm3/ : 246.0...249.0
1000 s: (243.0...252.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 140.0...142.0
1000 s: (137.0...145.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 14.00
Speed rpm : 1070...1080

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

:

Observe VDT-I-420/120

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 21.08.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 678 816

Injection pump
Pump designation : PE8P120A320LS7857
EP type number : 0 412 628 866
Governor
Governor design. : RSV550...1050POA826-3
Governor no. : 0 421 833 382

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442LA

1st version kW : 370.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
(4.95...5.15)
Rack travel in mm : 19.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1080

Rack travel in mm : 13.50...13.60

Del.quantity cm3/ : 25.9...26.1

100 s: (25.6...26.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 550.0

Rack travel in mm : 4.0...4.6

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1080

Del.quantity : 259.0...261.0

1000 : (256.0...264.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 12.50
Speed rpm : 1110...1120
2nd rack travel in: 4.00
Speed rpm : 1140...1158
4th rack travel in: 1500
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: ?
Setting point w/out bumper spring
Speed rpm : 550
Rack travel in mm : 4.3

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 550
Rack travel in mm : 4.20...4.40
Rack travel in mm : 2.00
Speed rpm : 560...620

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1080
Rack travel in m: 13.50...13.60
2nd speed rpm : 1000
Rack travel in m: 13.60...13.80
3rd speed rpm : 900
Rack travel in m: 14.00...14.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50
Speed rpm : 1110...1120

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 14.80...15.20

Remarks:

:

In order to adjust and test the EP combination, set full-load speed regul. at 1110...1120 1/min. Then set speed regul. to 1060...1070 1/min again.

APPLICATION

Forage harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 21.08.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 678 817

Injection pump
Pump designation : PE8P120A32OLS7856
EP type number : 0 412 628 867
Governor
Governor design. : RSV550...1050POA826-
4
Governor no. : 0 421 833 383

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442LA

1st version kW : 320.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness : 8.00X2.50X1000
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 19.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1080

Rack travel in mm : 13.70...13.80

Del. quantity cm³/ : 22.4...22.6

100 s: (22.1...22.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 550.0

Rack travel in mm : 4.0...4.6

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1080

Del. quantity : 224.0...226.0

1000 : (221.0...229.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: ?

Testing:

1st rack travel in: 12.70
Speed rpm : 1110...1120
2nd rack travel in: 4.00
Speed rpm : 1140...1158
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: ?
Setting point w/out bumper spring
Speed rpm : 550
Rack travel in mm : 4.3

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 550
Rack travel in mm : 4.20...4.40
Rack travel in mm : 2.00
Speed rpm : 560...620

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1080
Rack travel in m: 13.70...13.80
2nd speed rpm : 975
Rack travel in m: 13.80...14.00
3rd speed rpm : 900
Rack travel in m: 14.10...14.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del. quantity cm³/ : 240.0...244.0
1000 s: (237.0...247.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70
Speed rpm : 1110...1120

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 14.80...15.20

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 21.08.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 746 914

Injection pump
Pump designation : PES6P120A720LS7238-1
EP type number : 0 412 726 873
Governor
Governor design. : RQ300/1100PA1008
Governor no. : 0 421 801 591

Customer-spec. information
Customer : MB-NFZ

Engine : OM447 hLA

1st version kW : 220.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.70...13.90

Del.quantity cm3/ : 20.5...20.7

100 s: (20.2...21.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.2...6.8

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 600

Del.quantity : 205.0...207.0

1000 : (202.0...210.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.30
Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 200
Minimum rack travel: 8.40
Speed rpm : 300
Rack travel in mm : 6.20...6.80
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 600
Rack travel mm : 13.70...13.90

Measurement

Speed 1/min : 600

1st pressure hPa : 150
Rack travel in m: 11.50...11.70
2nd pressure hPa : 350
Rack travel in m: 13.00...13.20
3rd pressure hPa : 800
Rack travel in m: 13.80...14.00 *
4th pressure hPa : 950
Rack travel in m: 14.20...14.40
5th pressure hPa : -
Rack travel in m: 11.00...11.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 1100
Del.quantity cm3/ : 221.0...224.0
1000 s: (218.0...227.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 140.0...142.0
1000 s: (137.0...145.0)

Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.30
Speed rpm : 1145...1160

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 21.08.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 746 921

Injection pump
Pump designation : PES6P120A720LS7242-1
EP type number : 0 412 726 874
Governor
Governor design. : RQ300/1050PA774-5
Governor no. : 0 421 801 608

Customer spec. information
Customer : MERCEDES-BENZ

Engine : OM447 LA

1st version kW : 306.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 19.00...21.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.30...13.40

Del.quantity cm3/ : 27.4...27.6
100 s: (27.1...27.9)

Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 4.6...5.2
Del.quantity cm3/ : 1.4...2.0
100 s: (1.1...2.3)
Spread cm3 : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 1000
Del.quantity : 274.0...276.0
1000 : (271.0...279.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.20
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1145...1175
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.9

Testing:

Speed rpm : 200
Minimum rack travel: 7.00
Speed rpm : 300
Rack travel in mm : 4.80...5.00
Rack travel in mm : 2.00
Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : ?
2nd speed rpm : 1050
Rack travel in m: 13.20...13.40
3rd speed rpm : 700
Rack travel in m: 14.10...14.30

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.30...13.50

Measurement

Speed 1/min : 500

1st pressure hPa : 350
Rack travel in m: 9.80...10.00
2nd pressure hPa : 700
Rack travel in m: 12.10...12.30
3rd pressure hPa : 1300
Rack travel in m: 13.50...13.70
4th pressure hPa : 1425
Rack travel in m: 13.90...14.10
5th pressure hPa : -
Rack travel in m: 8.20...8.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600
Speed rpm : 1050
Del.quantity cm3/ : 269.0...272.0
1000 s: (266.0...275.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 700
Del.quantity cm3/ : 297.0...301.0
1000 s: (294.0...304.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 143.0...145.0
1000 s: (140.0...148.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.20
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 290.0...310.0
1000 s: (286.0...314.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : --
 Test oil : ISO-4113

Combination no. : 0 402 746 922

Injection pump
 Pump designation : PES6P120A720LS/238-1
 EP type number : 0 412 726 873
 Governor
 Governor design. : RQ300/1100PA1008
 Governor no. : 0 421 801 591

Customer spec. information
 Customer : MERCEDES-BENZ

Engine : OM447 hLA

1st version kW : 220.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - " : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.70...13.90

Del.quantity cm³/ : 20.5...20.7

100 s: (20.2...21.0)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.2...6.8

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 600

Del.quantity : 205.0...207.0

1000 : (202.0...210.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:
1st rack travel in: 13.30
Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:
Speed rpm : 200
Minimum rack travel: 8.40
Speed rpm : 300
Rack travel in mm : 6.20...6.80
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 600
Rack travel mm : 13.70...13.90

Measurement
Speed 1/min : 600

1st pressure hPa : 150
Rack travel in m: 11.50...11.70
2nd pressure hPa : 350
Rack travel in m: 13.00...13.20
3rd pressure hPa : 800
Rack travel in m: 13.80...14.00 *
4th pressure hPa : 950
Rack travel in m: 14.20...14.40
5th pressure hPa : -
Rack travel in m: 11.00...11.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 1100
Del.quantity cm3/ : 221.0...224.0
1000 s: (218.0...227.0)
Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 140.0...142.0
1000 s: (137.0...145.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.30
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 220.0...240.0
1000 s: (216.0...244.0)

Remarks:

:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 31.07.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 746 933
Injection pump
Pump designation : PES6P120A720LS7262
EP type number : 0 412 726 875
Governor
Governor design. : RQV350...1050PA1040
Governor no. : 0 421 814 007

Customer-spec. information
Customer : MTU

Engine : 6R183-02

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
: (3.95...4.15)
Rack travel in mm : 20.00...21.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050
Rack travel in mm : 13.90...14.00
Del.quantity cm3/ : 33.0...33.2
100 s: (32.7...33.5)

Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 350.0
Rack travel in mm : 4.7...5.1
Del.quantity cm3/ : 1.7...2.3
100 s: (1.4...2.6)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 1.30...1.80
2nd speed rpm : 455
travel mm : 2.80...3.30
3rd speed rpm : 900
travel mm : 5.40...5.90
4th speed rpm : 1107
travel mm : 7.80...8.30
5th speed rpm : 1204
travel mm : 9.70...10.20

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1180
Rack travel in mm : 11.70...14.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Aneroid pressure h: 1600

Del.quantity : 330.0...332.0
1000 : (327.0...335.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:
1st rack travel in: 13.00
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 60...68

Testing:
Speed rpm : 250
Minimum rack travel: 7.20
Speed rpm : 350
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION
Speed rpm : 350...550

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1600
Rack travel mm : 13.90...14.00

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 7.50...7.70
2nd pressure hPa : 1200
Rack travel in m: 13.60...13.70
3rd pressure hPa : 400
Rack travel in m: 9.20...9.50

START CUT-OUT

Speed 1/min : 290 (310)

FUEL DELIVERY CHARACTERISTICS

1st version

G07

Aneroid pressure h: 1600
Speed rpm : 750
Del.quantity cm3/ : 333.0...337.0
1000 s: (330.0...340.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 131.0...133.0
1000 s: (128.0...136.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 385.0...405.0
1000 s: (381.0...409.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 766 801
 Injection pump
 Pump designation : PES6P120A720/3LS7155
 -1
 EP type number : 0 412 726 880
 Governor
 Governor design. : RSV350...1050POA529
 -1
 Governor no. : 0 421 833 295

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM447 LA

1st version kW : 265.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 13.40...13.50

Del.quantity cm3/ : 24.0...24.2

100 s: (23.7...24.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 4.5...4.8

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1400

Del.quantity : 240.0...242.0

1000 : (237.0...245.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 98...106

Testing:
1st rack travel in: 12.40
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 4.6
Speed rpm : 350
Rack travel in mm : 4.50...4.80

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 13.40...13.50
2nd speed rpm : 825
Rack travel in m: 14.30...14.50
3rd speed rpm : 930
Rack travel in m: 13.90...14.10

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 650
Rack travel mm : 13.00...13.20

Measurement
Speed 1/min : 500

1st pressure hPa : 350
Rack travel in m: 10.70...10.90
2nd pressure hPa : 400
Rack travel in m: 11.40...11.60
3rd pressure hPa : 850
Rack travel in m: 13.20...13.40
4th pressure hPa : 950
Rack travel in m: 13.70...13.90
5th pressure hPa : -
Rack travel in m: 9.80...10.10

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 650
Speed rpm : 600
Del.quantity cm3/ : 234.0...237.0
1000 s: (231.0...240.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1400
Speed rpm : 825
Del.quantity cm3/ : 263.0...266.0
1000 s: (260.0...269.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 151.0...154.0
1000 s: (148.0...157.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.40
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
Edition : 21.08.92
Replaces : -
Test oil : ISO-4113
Combination no. : 9 400 083 463
Injection pump
Pump designation : PES6A95D12ORS2834
EP type number : 9 400 084 032
Governor
Governor design. : RSV400...1100A8C2259
-1R
Governor no. : 9 420 083 261

Customer-spec. information
Customer : CUMMINS

Engine : 6BT 5.9 L

1st version kW : 108.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.75...2.85
: (2.70...2.90)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 8.4...8.6

100 s: (8.2...8.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.0...5.2

Del.quantity cm3/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 84.0...86.0

1000 : (82.0...88.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 97...105

Testing:

1st rack travel in: 9.90

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1175...1205
4th rack travel in: 1350
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 67...75
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.6

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.00...5.20
Rack travel in mm : 2.00
Speed rpm : 490...550

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 10.90...11.00
2nd speed rpm : 700
Rack travel in m: 11.50...11.60
3rd speed rpm : 900
Rack travel in m: 11.20...11.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del.quantity cm3/ : 92.5...94.5
1000 s: (90.5...96.5)
Speed rpm : 900
Del.quantity cm3/ : 84.5...87.5
1000 s: (82.5...89.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...160.0
1000 s: (137.0...163.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.00...5.20

Del.quantity cm3/ : 9.0...13.0
1000 s: (7.0...15.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: C.D.C. # 3355079

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MM 3,9 b 1
Edition : 21.08.92
Replaces : 12.91
Test oil : ISO-4113

Combination no. : 9 400 085 243

Injection pump
Pump designation : PES4A80D32ORS1282-1
EP type number : 9 400 083 097
Governor
Governor design. : RS350/1500A2B2073-2R
Governor no. : 9 420 083 194

Customer-spec. information
Customer : MM

Engine : D 229-4

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.65...2.75
: (2.60...2.80)
Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
& maximum rack tra: 21.00
Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm : 1500

Rack travel in mm : 9.20...9.30

Del.quantity cm³/ : 5.8...5.9

100 s: (5.6...6.0)

Spread cm³ : 0.2

100 s: (0.4)

2nd speed rpm : 350.0

Rack travel in mm : 6.0...6.2

Del.quantity cm³/ : 0.7...1.1

100 s: (0.5...1.2)

Spread cm³ : 0.2

100 s: (0.3)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1500

Del.quantity : 58.0...59.0

1000 : (56.5...60.5)

Spread cm³ : 2.50

1000 : (4.00)

RATED SPEED

1st version

Control lever

position degrees: 60...68

Testing:

1st rack travel in: 8.20

Speed rpm : 1540...1550
2nd rack travel in: 4.00
Speed rpm : 1585...1615
4th rack travel in: 1700
Speed rpm : 0.30...1.70

Remarks:

LOW IDLE 1
Control lever
position degrees: 28...36
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.1

Testing:
Speed rpm : 250
Minimum rack trave: 6.80
Speed rpm : 350
Rack travel in mm : 6.00...6.20
Rack travel in mm : 4.00
Speed rpm : 430...490
Speed rpm : 700
Maximum rack trave: 3.20

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1500
Rack travel in m: 9.20...9.30
2nd speed rpm : 500
Rack travel in m: 10.60...10.70
3rd speed rpm : 900
Rack travel in m: 10.20...10.40
4th speed rpm : 1200
Rack travel in m: 9.50...9.80

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del.quantity cm3/ : 58.5...60.5
1000 s: (56.5...62.5)
Speed rpm : 900
Del.quantity cm3/ : 63.0...65.0
1000 s: (61.0...67.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 8.20
Speed rpm : 1540...1550

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM
Edition : 21.08.92
Replaces : -
Test oil : ISO-4113
Combination no. : 9 400 085 348
Injection pump
Pump designation : PES6A95D410RS2812
EP type number : 9 400 084 028
Governor
Governor design. : RSV350...900A7C627-3
R
Governor no. : 9 420 083 263

Customer-spec. information
Customer : MWM

Engine : 6.10 TCA

1st version kW : 154.5
Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.75...2.85
: (2.70...2.90)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
& maximum rack tra: 21.00
Difference * CS : 1.50...2.50

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 13.90...14.00

Del.quantity cm3/ : 13.6...13.8

100 s: (13.4...14.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.4...5.6

Del.quantity cm3/ : 1.5...1.9

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Del.quantity : 136.5...138.5

1000 : (134.5...140.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 97...105

Testing:

1st rack travel in: 13.00
Speed rpm : 900...904
2nd rack travel in: 4.00
Speed rpm : 928...940
4th rack travel in: 1100
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 68...76
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 360...420

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 13.90...14.00
2nd speed rpm : 550
Rack travel in m: 13.90...14.10
5th speed rpm : 400
Rack travel in m: 15.20...15.80

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.40...5.60
Del.quantity cm³/ : 15.5...19.5
1000 s: (13.0...22.0)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM
Edition : 21.08.92
Replaces : -
Test oil : ISO-4113

Combination no. : 9 400 085 349

Injection pump
Pump designation : PES6A95D410RS2812
EP type number : 9 400 084 028
Governor
Governor design. : RQV350...1250AB1260-1L
Governor no. : 9 420 080 330

Customer-spec. information
Customer : MWM

Engine : 6.10 T

1st version kW : 129.5
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.75...2.85
: (2.70...2.90)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
& maximum rack tra: 21.00
Difference ° CS : 1.50...2.50

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.50...12.60

Del. quantity cm³/ : 10.7...10.9

100 s: (10.5...11.1)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.4...5.6

Del. quantity cm³/ : 1.0...1.4

100 s: (0.8...1.5)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 7.10...7.30

2nd speed rpm : 300

travel mm : 0.80...1.30

3rd speed rpm : 550

travel mm : 2.50...3.00

4th speed rpm : 800

travel mm : 3.70...4.20

5th speed rpm : 1500

travel mm : 8.30...8.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1490

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Aneroid pressure h: 800
Del.quantity : 107.0...109.0
1000 : (105.0...111.0)
Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 106...114

Testing:
1st rack travel in: 10.70
Speed rpm : 1305...1315
2nd rack travel in: 4.00
Speed rpm : 1455...1485
4th rack travel in: 1630
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 64...72

Testing:
Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 350
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION
Speed rpm : 325...475

TORQUE CONTROL
Dimension a mm : 0.80
Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 12.50...12.60
2nd speed rpm : 1250
Rack travel in m: 11.70...11.80
3rd speed rpm : 800
Rack travel in m: 12.50...12.60
4th speed rpm : 1150
Rack travel in m: 12.00...12.10

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 800
Rack travel mm : 12.50...12.60

Measurement
Speed 1/min : 500

G17

1st pressure hPa : -
Rack travel in m: 10.60...10.80
2nd pressure hPa : 315
Rack travel in m: 10.90...11.00
3rd pressure hPa : 600
Rack travel in m: 12.80...13.10

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 800
Speed rpm : 1250
Del.quantity cm³/ : 97.0...101.0
1000 s: (95.0...103.0)
Aneroid pressure h: 800
Speed rpm : 800
Del.quantity cm³/ : 106.0...109.0
1000 s: (104.0...111.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 70.5...72.5
1000 s: (68.5...74.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.70
Speed rpm : 1305...1315

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.40...5.60
Del.quantity cm³/ : 10.0...14.0
1000 s: (8.5...15.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 21.08.92
Replaces : -
Test oil : ISO-4113
Combination no. : 9 400 085 350
Injection pump
Pump designation : PES6A95D410RS2772
EP type number : 9 400 084 018
Governor
Governor design. : RGV300...1300AB1066-12
Governor no. : 9 420 0E0 331

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM 366 LA

1st version kW : 154.5
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
: (3.15...3.35)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.08)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 9.8...10.0

100 s: (9.6...10.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.9...7.1

Del.quantity cm3/ : 0.8...1.4

100 s: (0.6...1.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.80...1.30

2nd speed rpm : 500

travel mm : 2.30...2.80

3rd speed rpm : 750

travel mm : 4.10...4.30

4th speed rpm : 1500

travel mm : 8.50...8.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1500

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 98.0...100.0

1000 : (96.0...102.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 106...114

Testing:
1st rack travel in: 10.10
Speed rpm : 1360...1370
2nd rack travel in: 4.00
Speed rpm : 1490...1520
4th rack travel in: 1650
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 62...70

Testing:
Speed rpm : 100
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.90...7.10

CONSTANT REGULATION
Speed rpm : 420...550

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 11.10...11.20

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.60...8.90
2nd pressure hPa : 400
Rack travel in m: 10.73...10.50
3rd pressure hPa : 270
Rack travel in m: 9.00...9.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 700
Del.quantity cm³/ : 86.0...89.0
1000 s: (83.5...91.5)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 44.0...46.0
1000 s: (42.0...48.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.10
Speed rpm : 1360...1370

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...90.0
1000 s: (-)
Rack travel in mm : 13.60...13.80

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 9 400 085 351

Injection pump
 Pump designation : PES6A95D41DRS2772
 EP type number : 9 400 084 018
 Governor
 Governor design. : RGV300...1300AB1066-13L
 Governor no. : 9 420 080 240

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 366 LA

1st version kW : 147.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
 : (3.15...3.35)

G20

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.08)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 9.7...9.9

100 s: (9.5...10.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 6.9...7.1
 Del.quantity cm3/ : 0.8...1.4
 100 s: (0.6...1.6)

Spread cm3 : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.80...1.30
 2nd speed rpm : 500
 travel mm : 2.30...2.80
 3rd speed rpm : 750
 travel mm : 4.10...4.30
 4th speed rpm : 1500
 travel mm : 8.50...8.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1500
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1300
 Aneroid pressure h: 700
 Del.quantity : 97.0...99.0
 1000 : (95.0...101.0)

Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 106...114

Testing:
1st rack travel in: 10.10
Speed rpm : 1360...1370
2nd rack travel in: 4.00
Speed rpm : 1490...1520
4th rack travel in: 1650
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 62...70

Testing:
Speed rpm : 100
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.90...7.10

CONSTANT REGULATION
Speed rpm : 420...550

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 11.10...11.20

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.40...9.70
2nd pressure hPa : 500
Rack travel in m: 10.40...10.50
3rd pressure hPa : 350
Rack travel in m: 9.80...10.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 700
Del.quantity cm³/ : 84.0...87.0
1000 s: (81.5...89.5)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 59.0...61.0
1000 s: (57.0...63.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.10
Speed rpm : 1360...1370

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 85.0...97.0
Rack travel in mm : 13.40...13.60

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 085 352
 Injection pump
 Pump designation : PES6A950410RS2795
 EP type number : 9 400 084 020
 Governor
 Governor design. : RSV350...1050A0C1150
 -7L
 Governor no. : 9 420 085 287

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 366

1st version kW : 70.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 7.80...7.90

Del.quantity cm3/ : 4.7...4.9

100 s: (4.5...5.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.9...7.1

Del.quantity cm3/ : 1.0...1.6

100 s: (0.8...1.8)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 300

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 47.5...49.5

1000 : (45.5...51.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 101...109

Testing:

1st rack travel in: 6.80

Speed rpm : 1090...1100

2nd rack travel in: 4.00

Speed rpm : 1130...1160

4th rack travel in: 1300

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 81...89

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 6.5

Testing:

Speed rpm : 100

Minimum rack trave: 19.00

Speed rpm : 350

Rack travel in mm : 6.90...7.10

Rack travel in mm : 2.00

Speed rpm : 555...615

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 7.80...7.90

2nd speed rpm : 600

Rack travel in m: 9.20...9.30

4th speed rpm : 900

Rack travel in m: 8.10...8.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600

Del.quantity cm3/ : 52.5...55.5

1000 s: (50.5...57.5)

Speed rpm : 900

Del.quantity cm3/ : 52.0...55.0

1000 s: (50.0...57.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 6.80

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 78.0...90.0

1000 s: (75.0...93.0)

Rack travel in mm : 12.90...13.10

Remarks:

:

APPLICATION

Tractor (tractor engines)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VOL 3,1 A4
Edition : 10.12.91
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/11F1625L217-2B
Type number : 0 460 414 031
Customer Part-No. :

Customer-specific information
Customer : PENTA

Engine : TAM 31

Power KW: 81

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: 0.3
(from BDC): $\pm 0,02(0.04)$

Indicator setting
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Charge press. hPa: 1000

Setting value mm: 2.30...2.70

Supply-pump pressure

Speed 1/min: 1500
Charge press hPa: 1000
Setting value bar: 6.10...6.70

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 83.50...84.50
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 650
Del. quantity cm3/
1000S.: 51.00...52.00

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm3/
1000S.: 23.00...27.00
Del. quantity cm3/: 3.5
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1800
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 31.00...37.00

Start:

Speed 1/min: 100
Del. quantity cm3/: 95.00...135.00
mind 1000S.: 95.00

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1625
Charge press hPa: 1000
TD travel mm: 3.10...3.90
mm: (2.80...4.20)

3rd speed 1/min: 1500
Charge press hPa: 1000
TD travel mm: 2.30...2.70
mm: (1.80...3.20)

4th speed 1/min: 1300
Charge press hPa: 1000
TD travel mm: 0.50...1.30
mm: (0.20...1.60)

Supply-pump pressure characteristic:

1st speed 1/min: 1625
 Charge press. hPa: 1000
 Supply-pump pressure bar: 6.60...7.20
 2nd speed 1/min: 1500
 Charge press. hPa: 1000
 Supply-pump pressure bar: 6.10...6.70
 3rd speed 1/min: 800
 Charge press. hPa: 1000
 Supply-pump pressure bar: 3.40...4.00

Overflow quantity at overflow valve:

1st speed 1/min: 800
 Charge press. hPa: 1000
 Overflow quantity cm³/10s: (41.70...83.40)
 2nd speed 1/min: 1625
 Charge press. hPa: 1000
 Overflow quantity cm³/10s: (55.60...139.00)
 3rd speed 1/min: 800
 Charge press. hPa: 1000
 Overflow quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800*
 Charge-air pressure-setting point hPa: 300
 LDA-stroke mm: 6.4
 Del. quantity cm³/1000S.: (65.00...66.00)
 2nd speed 1/min: 1970
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: (63.20...67.80)
 3rd speed 1/min: 1880
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: (3.00...11.00)
 5th speed 1/min: 1800
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: (2.00...12.00)
 9th speed 1/min: 1625
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: (31.00...37.00)
 12th speed 1/min: 1500
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: (30.00...38.00)
 15th speed 1/min: 1625
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: (78.50...81.50)
 18th speed 1/min: 1500
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: (81.70...86.30)
 20th speed 1/min: 1000
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: (83.50...84.50)
 25th speed 1/min: 800
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: (91.70...94.30)
 30th speed 1/min: 650
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: (90.70...95.30)

18th speed 1/min: 650
 Charge press. hPa: -
 Del. quantity cm³/1000S.: (51.00...52.00)
 20th speed 1/min: 800
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: (49.20...53.80)
 25th speed 1/min: 800
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: (90.00...93.00)
 30th speed 1/min: 800
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: (88.50...94.50)

Mech. shutoff: Mech. Abstellung:

1st speed 1/min: 1625
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: (0.00...3.00)
 Shutoff electromagnet volt: -

Electr. shutoff:

1st speed 1/min: 350
 Charge press. hPa: -
 Del. quantity cm³/1000S.: (0.00...3.00)
 Shutoff electromagnet volt: 12

Idle delivery:

1st speed 1/min: 350
 Del. quantity cm³/1000S.: (23.00...27.00)
 Dispersion cm³/1000S.: (3.5)
 2nd speed 1/min: 480
 Del. quantity cm³/1000S.: (0.00...3.00)
 3rd speed 1/min: 400
 Del. quantity cm³/1000S.: (7.00...13.00)
 4th speed 1/min: 350
 Del. quantity cm³/1000S.: (5.50...14.50)

Automatic starting fuel delivery:

4th speed 1/min: 100
 Del. quantity cm³/1000S.: (95.00...135.00)
 Shutoff electromagnet:

Cut-in min voltage : 10.0
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
 K mm: -
 KF mm: K-OT

MS mm: 1.1...1.5
SVS max. mm: 0.9
LDA stroke mm: 6.4
XK mm: 18.8...20.8
XL mm: 11.1...14.5

Remarks:

:
:

Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut (46)

Pushing electromagnet.

Always pay attention to test
instructions for DISTRIBUTOR-TYPE
INJECTION PUMPS FOR DI ENGINES!

Information additionally
required for testing fuel-injection
pump:

TEST PREREQUISITES

Calibrating-oil return temperature with
thermometer, °C :45

Calibrating-oil inlet
temperature, °C :35...40

Dwell speed, 1/min :1100
Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS FOR FUEL-INJECTION PUMP, delivery rates

Test speed, 1/min :<500
Temperature stabilisation
speed 1/min :1800
Output temperature, °C :51
Measurement temperature, °C:49

Test speed, 1/min :500...799
Temperature stabilisation
speed 1/min :1800
Output temperature, °C :48
Measurement temperature, °C:46

Test speed, 1/min :800...1199
Temperature stabilisation
speed 1/min :1800/100
Output temperature, °C :45
Measurement temperature, °C:45

Test speed, 1/min :1200...1700

Temperature stabilisation
speed 1/min :100
Output temperature, °C :42
Measurement temperature, °C:44

Test speed, 1/min : 1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :41
Measurement temperature, °C:43

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VOL 3,1 A5
Edition : 10.12.91
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/11F1625L217-4B
Type number : 0 460 414 034
Customer Part-No. :

Customer-specific information
Customer : PENTA

Engine : TAM 31

Power KW: 81

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: 0.3
(from BDC): $\pm 0,02(0.04)$

Indicator setting
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Charge press. hPa: 1000

Setting value mm: 2.30...2.70

Supply-pump pressure

Speed 1/min: 1500
Charge press hPa: 1000
Setting value bar: 6.10...6.70

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 83.50...84.50
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 650
Del. quantity cm³/
1000S.: 51.00...52.00

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm³/
1000S.: 23.00...27.00
Del. quantity cm³/: 3.5
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1800
Charge press hPa: 1000
Del. quantity cm³/
1000S.: 31.00...37.00

Start:

Speed 1/min: 100
Del. quantity cm³/: 95.00...135.00
mind 1000S.: 95.00

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1625
Charge press hPa: 1000
TD travel mm: 3.10...3.90
mm: (2.80...4.20)

3rd speed 1/min: 1500
Charge press hPa: 1000
TD travel mm: 2.30...2.70
mm: (1.80...3.20)

4th speed 1/min: 1300
Charge press hPa: 1000
TD travel mm: 0.50...1.30
mm: (0.20...1.60)

Supply-pump pressure characteristic:

1st speed 1/min: 1625
Charge press. hPa: 1000
Supply-pump pressure bar: 6.60...7.20
2nd speed 1/min: 1500
Charge press. hPa: 1000
Supply-pump pressure bar: 6.10...6.70
3rd speed 1/min: 800
Charge press. hPa: 1000
Supply-pump pressure bar: 3.40...4.00

Overflow quantity at overflow valve:

1st speed 1/min: 800
Charge press. hPa: 1000
Overflow quantity cm³/10s: 41.70...83.40
2nd speed 1/min: 1625
Charge press. hPa: 1000
Overflow quantity cm³/10s: 55.60...139.00
3rd speed 1/min: 800
Charge press. hPa: 1000
Overflow quantity cm³/10s: 40.60...154.00

Delivery-quant. and breakaway char.:

1st speed 1/min: 800*
Charge-air pressure-setting point hPa: 300
LDA-stroke mm: 6.4
Del. quantity cm³/1000S.: 65.00...66.00
2nd speed 1/min: 1970
Charge press. hPa: 1000
Del. quantity cm³/1000S.: 0.00...3.00
3rd speed 1/min: 1880
Charge press. hPa: 1000
Del. quantity cm³/1000S.: 3.00...11.00
5th speed 1/min: 1800
Charge press. hPa: 1000
Del. quantity cm³/1000S.: 31.00...37.00
9th speed 1/min: 1625
Charge press. hPa: 1000
Del. quantity cm³/1000S.: 78.50...81.50
12th speed 1/min: 1500
Charge press. hPa: 1000
Del. quantity cm³/1000S.: 83.50...84.50
15th speed 1/min: 1000
Charge press. hPa: 1000
Del. quantity cm³/1000S.: 91.70...94.30

18th speed 1/min: 650
Charge press. hPa: -
Del. quantity cm³/1000S.: 51.00...52.00
20th speed 1/min: 800
Charge press. hPa: 1000
Del. quantity cm³/1000S.: 90.00...93.00

Mech. shutoff: Mech. Abstellung:

1st speed 1/min: 1625
Charge press. hPa: 1000
Del. quantity cm³/1000S.: 0.00...3.00

Shutoff electromagnet volt: -

Electr. shutoff:

1st speed 1/min: 350
Charge press. hPa: -
Del. quantity cm³/1000S.: 0.00...3.00

Shutoff electromagnet volt: 24

Idle delivery:

1st speed 1/min: 350
Del. quantity cm³/1000S.: 23.00...27.00
Dispersion cm³/1000S.: 3.5
2nd speed 1/min: 480
Del. quantity cm³/1000S.: 0.00...3.00
3rd speed 1/min: 400
Del. quantity cm³/1000S.: 7.00...13.00

Automatic starting fuel delivery:

4th speed 1/min: 100
Del. quantity cm³/1000S.: 95.00...135.00

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: -
KF mm: K-OT

MS mm: 1.1...1.5
 SVS max. mm: 0.9
 LDA stroke mm: 6.4
 XK mm: 18.8...20.8
 XL mm: 11.1...14.5

Remarks:

:

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

Pushing electromagnet.

Always pay attention to test instructions for DISTRIBUTOR-TYPE INJECTION PUMPS FOR DI ENGINES!

Information additionally required for testing fuel-injection pump:

TEST PREREQUISITES

Calibrating-oil return temperature with thermometer, °C :45

Calibrating-oil inlet temperature, °C :35...40

Dwell speed, 1/min :1100

Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS FOR FUEL-INJECTION PUMP, delivery rates

Test speed, 1/min :<500

Temperature stabilisation

speed 1/min :1800

Output temperature, °C :51

Measurement temperature, °C:49

Test speed, 1/min :500...799

Temperature stabilisation

speed 1/min :1800

Output temperature, °C :48

Measurement temperature, °C:46

Test speed, 1/min :800...1199

Temperature stabilisation

speed 1/min :1800/100

Output temperature, °C :45

Measurement temperature, °C:45

Test speed, 1/min :1200...1700

Temperature stabilisation
 speed 1/min :100
 Output temperature, °C :42
 Measurement temperature, °C:44

Test speed, 1/min : 1700

Temperature stabilisation

speed 1/min :100

Output temperature, °C :41

Measurement temperature, °C:43

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : S0F 2,5 R
Edition : 10.12.91
replaces : 24.10.89
Calibrating oil : ISO-4113

Injection pump : VE4/11F1900R294
Type number : 0 460 414 054
Customer Part-No. :

Customer-specific information
Customer : SOFIM

Engine : 8140.27.200

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
Charge press. hPa: 1000
Setting value mm: 1.10...1.50
Shutoff
electromagnet Volt: 12

H02

Supply-pump pressure

Speed 1/min: 1100
Charge press hPa: 1000
Setting value bar: 5.80...6.40
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1800
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 54.50...55.50

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 650
Del. quantity cm3/
1000S.: 27.50...28.50

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm3/
1000S.: 13.00...17.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 6.0
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 2200
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 20.50...26.50

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 40.00...80.00
mind 1000S.: 40.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1100
Charge press hPa: 1000

Inj.-qty. cm3/
 difference 1000s.: 25.0...33.00
 Shutoff
 electromagnet Volt: 12
 TD-travel dif.measurement
 correttore anticipo iniezione (SV)
 1.Speed 1/min: 1100
 TD-travel
 difference mm: 0.40...0.60
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1750
 Charge press hPa: 1000
 TD travel mm: 5.00...5.80
 mm: (4.70...6.10)

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1100
 Charge press hPa: 1000
 TD travel mm: 1.10...1.50
 mm: (0.60...2.00)

Shutoff
 electromagnet Volt: 12
 6th speed 1/min: 1500
 Charge press. hPa: 1000
 TD travel mm: 3.60...4.40
 mm: (3.30...4.70)

Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 650
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 4.10...4.70

Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1100
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 5.80...6.40

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1750
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 7.70...8.30

Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 650

H03

Charge press. hPa: -
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm3/10s: (26.70...98.40)
 2nd speed 1/min: 1900
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm3/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 800*
 Charge-air pressure-setting
 point hPa: 450
 LDA-stroke mm: 6,5
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 36.50...37.50
 1000S.: (33.00...41.00)

2nd speed 1/min: 2350
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 0.00...5.00
 1000S.: -

5th speed 1/min: 2200
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 20.50...26.50
 1000S.: (19.00...28.00)

8th speed 1/min: 2100
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 40.50...48.50
 1000S.: (38.50...50.50)

9th speed 1/min: 1900
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 50.00...56.00
 1000S.: (49.50...56.50)

11th speed 1/min: 1500
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 52.50...57.50
 1000S.: (51.00...59.00)

12th speed 1/min: 1800
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quynity cm3/: 54.50...55.50
 1000S.: (51.50...58.50)

15th speed 1/min: 1100

Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 51.50...56.50
 1000S.: (50.00...58.00)
 18th speed 1/min: 650
 Charge press. hPa: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 27.50...28.50
 1000S.: (24.50...31.50)
 20th speed 1/min: 650
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 50.50...59.50
 1000S.: (49.50...60.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 375
 Del. quantity cm³/: 0.00...3.00
 Shutoff
 electromagnet volt: -

Idle delivery:

1st speed 1/min: 375
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 13.00...17.00
 1000S.: (11.00...19.00)
 Dispersion cm³/: 6.0
 1000S.: (6.5)
 2nd speed 1/min: 450
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...5.00
 1000S.: -
 3rd speed 1/min: 325
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 39.00...49.00
 1000S.: (38.00...50.00)

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

1st speed 1/min: 1100
 Charge press. hPa: 1000
 Inj.-qty. cm³/: 24.5...26.5 #
 difference 1000S.: -
 KSB/AFB
 valve Volt: 12
 4th speed 1/min: 1100
 Charge press. hPa: 1000
 Inj.-qty. cm³/: 2.00...8.00
 difference 1000S.: -

Shutoff
 electromagnet Volt: 12

TD-travel dif.measurement:
 correttore anticipo iniezione (SV):
 1st speed 1/min: 1100
 Charge press. hPa: 1000
 TD-travel : 0.40...1.20
 difference mm: -
 Shutoff
 electromagnet Volt: 12

SP press.-dif.measurement:
 pompa di mandata (FP):
 1st speed 1/min: 1100
 Charge press. hPa: 1000
 Supply pump-
 pressure : 0.10...0.30 #
 difference bar: -

Automatic starting fuel delivery:

1st speed 1/min: 350
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 42.00...78.00
 1000S.: -

2nd speed 1/min: 450
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 12.00...48.00
 1000S.: -

4th speed 1/min: 100
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 40.00...80.00
 1000S.: -

Shutoff electromagnet:

Cut-in
 min voltage : 10.0
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation	
K	mm: 3.2...3.4
KF	mm: K-OT
MS	mm: 0.6...1.0
SVS max.	mm: 2.5
LDA stroke	mm: 6.5
XK	mm: 21.8...23.8
XL	mm: 12.3...15.7

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

Always pay attention to test instructions for DISTRIBUTOR-TYPE INJECTION PUMPS FOR DI ENGINES!

Information additionally required for testing fuel-injection pump:

TEST PREREQUISITES

Calibrating-oil return temperature with thermometer, °C :45

Calibrating-oil inlet temperature, °C :35...40

Dwell speed, 1/min :1100

Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS FOR FUEL-INJECTION PUMP, delivery rates

Test speed, 1/min :<500

Temperature stabilisation speed 1/min :2200

Output temperature, °C :51

Measurement temperature, °C:49

Test speed, 1/min :500...799

Temperature stabilisation speed 1/min :2200

Output temperature, °C :48

Measurement temperature, °C:46

Test speed, 1/min :800...1199

Temperature stabilisation speed 1/min :2200/100

Output temperature, °C :45

Measurement temperature, °C:45

Test speed, 1/min :1200...1700

Temperature stabilisation speed 1/min :100

Output temperature, °C :42

Measurement temperature, °C:44

Test speed, 1/min : 1700

Temperature stabilisation speed 1/min :100

Output temperature, °C :41

Measurement temperature, °C:43

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 2,5 A1
Edition : 03.02.92
replaces : 09.12.91
Calibrating oil : ISO-4113

Injection pump : VE4/11F2100R286-1
Type number : 0 460 414 059
Customer Part-No. :

Customer-specific information
Customer : FIAT-AUTO

Engine : M711 AT 19.0

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 343

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Indicator setting
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Charge press. hPa: 1000
Setting value mm: 6.60...7.00
AFB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
Charge press hPa: 1000
Setting value bar: 7.30...7.90
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1750
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 47.30...48.30
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 3.0
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 750
Del. quantity cm³/
1000S.: 23.30...24.30
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

11

Low-idle speed regulation

Speed 1/min: 450
Del. quantity cm³/
1000S.: 6.00...10.00
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.0
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 2400
Charge press hPa: 1000
Del. quantity cm³/
1000S.: 17.00...23.00

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

 Start:

 Speed 1/min: 100
 Del. quantity cm³: 40.00...80.00
 mind 1000S.: 40.00
 KSB/AFB
 Valve Volt: 12
 Shutoff
 electromagnet Volt: 12

 Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

 Speed 1/min: 1750
 Charge press hPa: -
 Inj.-qty. cm³/
 difference 1000S.: 9.00...15.00 *
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 TD-travel dif.measurement
 correttore anticipo iniezione (SV)
 1.Speed 1/min: 1750
 Charge press hPa: -
 TD-travel
 difference mm: 0.50...0.70 *
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

 Inspection-pump test specifications
 Test specifications in parentheses

 Timing-device characteristic:

 2nd speed 1/min: 2100
 Charge press hPa: 1000
 TD travel mm: 9.30...10.10
 mm: (8.80...10.60)

 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1500
 Charge press hPa: 1000
 TD travel mm: 6.60...7.00
 mm: (6.30...7.30)

 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 750
 Charge press hPa: 1000

H07

TD travel mm: 2.50...3.30
 mm: (2.00...3.80)

 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 8th speed 1/min: 1000
 Charge press. hPa: 1000
 TD travel mm: 3.20...5.20
 mm: (3.00...5.40)

 KSB/AFB
 valve Volt: -
 Shutoff
 electromagnet Volt: 12
 9th speed 1/min: 450
 Charge press. hPa: 1000
 TD travel mm: 3.30...3.50
 mm: (2.40...4.40)

 KSB/AFB
 valve Volt: -
 Shutoff
 electromagnet Volt: 12

 Supply-pump pressure characteristic:

 1st speed 1/min: 1500
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 7.30...7.90
 bar: (7.10...8.10)

 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 2100
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 8.50...9.10
 bar: (8.30...9.30)

 KSE/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 750
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 5.50...6.10
 bar: (5.30...6.30)

 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

 Overflow quantity at overflow valve:

 1st speed 1/min: 600
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12

Shutoff
 electromagnet Volt: 12
 Overflow : 75.00...119.540
 quantity cm3/10s: (60.00...134.50)
 2nd speed 1/min: 2100
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Overflow : 97.30...180.70
 quantity cm3/10s: (82.30...195.70)
 Delivery-quant. and breakaway char.:

1nd speed 1/min: 750*
 Charge-air pressure-setting
 point hPa: 400
 LDA-stroke mm: 6.3
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 32.50...33.50
 1000S.: (28.00...38.00)
 3rd speed 1/min: 2500
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 0.00...6.00
 1000S.: -
 5th speed 1/min: 2400
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 17.00...23.00
 1000S.: (16.00...24.00)
 8th speed 1/min: 2300
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 27.00...35.00
 1000S.: -
 9th speed 1/min: 2100
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 45.50...48.50
 1000S.: (43.80...50.20)
 12th speed 1/min: 1750
 Charge press. hPa: 1000

H08

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 47.30...48.30
 1000S.: (45.80...49.80)
 13th speed 1/min: 750
 Charge press. hPa: 720
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 45.50...49.50
 1000S.: -
 18th speed 1/min: 750
 Charge press. hPa: -
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 23.30...24.30
 1000S.: (21.30...26.30)
 20th speed 1/min: 750
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 45.50...47.50
 1000S.: -
 21th speed 1/min: 600
 Charge press. hPa: -
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 17.0...20.00
 1000S.: -
 Mech. shutoff:
 Electr. shutoff:
 1st speed 1/min: 450
 Del. quantity cm3/: 0.00...3.00
 1000S.: -
 Shutoff
 electromagnet volt: -
 Idle delivery:
 1st speed 1/min: 450
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 6.00...10.00
 1000S.: (3.50...12.50)
 Dispersion cm3/: 3.0
 1000S.: (3.5)

2nd speed 1/min: 800
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...2.40
 1000s.: -
 3rd speed 1/min: 600
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...3.00
 1000s.: -

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

1st speed 1/min: 1750
 Inj.-qty. cm³/: 11.0...13.0 #
 difference 1000s.: -
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

SP press.-dif.measurement:
 pompa di mandata (FP):
 1st speed 1/min: 1750
 Supply pump-
 pressure : 0.50...0.70 #
 difference bar: -
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Automatic starting fuel delivery:

2nd speed 1/min: 450
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 25.00...55.00
 1000s.: -

4th speed 1/min: 100
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 40.00...80.00
 1000s.: -

Shutoff electromagnet:

Cut-in
 min voltage : 10,0

H09

Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
 K mm: 3,2...3,4
 KF mm: -
 MS mm: 0.6...1.0
 LDA stroke mm: 6,3
 XK mm: 17.0...19.0
 XL mm: 10.3...13.7

Remarks:

:
 :
 Overflow restriction 0.75 mm - Part No.
 ..343,..344

Operate control lever after each
 manifold-pressure compensator pressure
 change.

* Correction at adjusting nut (46)

Always pay attention to test
 instructions for DISTRIBUTOR-TYPE
 INJECTION PUMPS FOR DI ENGINES!

Information additionally
 required for testing fuel-injection
 pump:

TEST PREREQUISITES
 Calibrating-oil return temperature with
 thermometer, °C :45

Calibrating-oil inlet
 temperature, °C :35...40

Dwell speed, 1/min :1100
 Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS
 FOR FUEL-INJECTION PUMP,
 delivery rates

Test speed, 1/min :<500
 Temperature stabilisation
 speed 1/min :2400
 Output temperature, °C :51
 Measurement temperature, °C:49

Test speed, 1/min :500...799
 Temperature stabilisation
 speed 1/min :2400
 Output temperature, °C :48
 Measurement temperature, °C:46

Test speed, 1/min :800...1199
Temperature stabilisation
speed 1/min :2400/100
Output temperature, °C :45
Measurement temperature, °C:45

Test speed, 1/min :1200...1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :42
Measurement temperature, °C:44

Test speed, 1/min : 1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :41
Measurement temperature, °C:43

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : S0F 2,5 R1
Edition : 10.12.91
replaces : 24.10.89
Calibrating oil : ISO-4113

Injection pump : VE4/11F1900R294-1
Type number : 0 460 414 066
Customer Part-No. :

Customer-specific information
Customer : SOFIM

Engine : 8140.27.200

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
Charge press. hPa: 1000
Setting value mm: 1.10...1.50
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100
Charge press hPa: 1000
Setting value bar: 5.80...6.40
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1800
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 54.50...55.50

Shutoff
electromagnet Volt: 12
Dispersion cm³/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 650
Del. quantity cm³/
1000S.: 27.50...28.50

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm³/
1000S.: 13.00...17.00

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 6.0
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 2200
Charge press hPa: 1000
Del. quantity cm³/
1000S.: 20.50...26.50

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 40.00...80.00
mind 1000S.: 40.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1100
Charge press hPa: 1000

Inj.-qty. cm³/
 difference 1000S.: 25.0...33.00
 Shutoff
 electromagnet Volt: 12
 TD-travel dif.measurement
 correttore anticipo iniezione (SV)
 1.Speed 1/min: 1100
 TD-travel
 difference mm: 0.40...0.60
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1750
 Charge press hPa: 1000
 TD travel mm: 5.00...5.80
 mm: (4.70...6.10)

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1100
 Charge press hPa: 1000
 TD travel mm: 1.10...1.50
 mm: (0.60...2.00)

Shutoff
 electromagnet Volt: 12
 6th speed 1/min: 1500
 Charge press. hPa: 1000
 TD travel mm: 3.60...4.40
 mm: (3.30...4.70)

Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 650
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 4.10...4.70

Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1100
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 5.80...6.40

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1750
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 7.70...8.30
 Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 650

Charge press. hPa: -
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm³/10s: (26.70...98.40)
 2nd speed 1/min: 1900
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 800*
 Charge-air pressure-setting
 point hPa: 450
 LDA-stroke mm: 6,5
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 36.50...37.50
 1000S.: (33.00...41.00)

2nd speed 1/min: 2350
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...5.00
 1000S.: -

5th speed 1/min: 2200
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 20.50...26.50
 1000S.: (19.00...28.00)

8th speed 1/min: 2100
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 40.50...48.50
 1000S.: (38.50...50.50)

9th speed 1/min: 1900
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 50.00...56.00
 1000S.: (49.50...56.50)

11th speed 1/min: 1500
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 52.50...57.50
 1000S.: (51.00...59.00)

12th speed 1/min: 1800
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 54.50...55.50
 1000S.: (51.50...58.50)
 15th speed 1/min: 1100

Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 51.50...56.50
 1000S.: (50.00...58.00)
 18th speed 1/min: 650
 Charge press. hPa: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 27.50...28.50
 1000S.: (24.50...31.50)
 20th speed 1/min: 650
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 50.50...59.50
 1000S.: (49.50...60.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 375
 Del. quantity cm³/: 0.00...3.00
 Shutoff
 electromagnet volt: -

Idle delivery:

1st speed 1/min: 375
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 13.00...17.00
 1000S.: (11.00...19.00)
 Dispersion cm³/: 6.0
 1000S.: (6.5)
 2nd speed 1/min: 450
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...5.00
 1000S.: -
 3rd speed 1/min: 325
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 39.00...49.00
 1000S.: (38.00...50.00)

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

1st speed 1/min: 1100
 Charge press. hPa: 1000
 Inj.-qty. cm³/ : 24.5...26.5 #
 difference 1000S.: -
 KSB/AFB
 valve Volt: 12
 4th speed 1/min: 1100
 Charge press. hPa: 1000
 Inj.-qty. cm³/ : 2.00...8.00
 difference 1000S.: -

Shutoff
 electromagnet Volt: 12

TD-travel dif.measurement:
 correttore anticipo iniezione (SV):
 1st speed 1/min: 1100
 Charge press. hPa: 1000
 TD-travel : 0.40...1.20
 difference mm: -
 Shutoff
 electromagnet Volt: 12

SP press.-dif.measurement:
 pompa di mandata (FP):
 1st speed 1/min: 1100
 Charge press. hPa: 1000
 Supply pump-
 pressure : 0.10...0.30 #
 difference bar: -

Automatic starting fuel delivery:

1st speed 1/min: 350
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 42.00...78.00
 1000S.: -

2nd speed 1/min: 450
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 12.00...48.00
 1000S.: -

4th speed 1/min: 100
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 40.00...80.00
 1000S.: -

Shutoff electromagnet:

Cut-in
 min voltage : 10.0
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation	
K	mm: 3.2...3.4
KF	mm: K-OT
MS	mm: 0.6...1.0
SVS max.	mm: 2.5
LDA stroke	mm: 6.5
XK	mm: 21.8...23.8
XL	mm: 12.3...15.7

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

Always pay attention to test instructions for DISTRIBUTOR-TYPE INJECTION PUMPS FOR DI ENGINES!

Information additionally required for testing fuel-injection pump:

TEST PREREQUISITES

Calibrating-oil return temperature with thermometer, °C :45

Calibrating-oil inlet temperature, °C :35...40

Dwell speed, 1/min :1100

Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS FOR FUEL-INJECTION PUMP, delivery rates

Test speed, 1/min :<500

Temperature stabilisation speed 1/min :2200

Output temperature, °C :51

Measurement temperature, °C:49

Test speed, 1/min :500...799

Temperature stabilisation speed 1/min :2200

Output temperature, °C :48

Measurement temperature, °C:46

Test speed, 1/min :800...1199

Temperature stabilisation speed 1/min :2200/100

Output temperature, °C :45

Measurement temperature, °C:45

Test speed, 1/min :1200...1700

Temperature stabilisation speed 1/min :100

Output temperature, °C :42

Measurement temperature, °C:44

Test speed, 1/min : 1700

Temperature stabilisation speed 1/min :100

Output temperature, °C :41

Measurement temperature, °C:43

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 2,5 F
Edition : 05.12.91
replaces : 07.11.89
Calibrating oil : ISO-4113

Injection pump : VE4/11F2000R366
Type number : 0 460 414 073
Customer Part-No. :

Customer-specific information
Customer : FORD

Engine : 2.5l DI Gr.Spec

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 023

Opening
Pressure bar: 172.00...175.00

Perforated-plate
diameter mm: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Start of delivery block
Piston stroke mm: 0.78
mm: 0.73...0.83

Outlet : B

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 2.50...2.90
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000
Setting value bar: 4.80...5.40
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 30.50...31.50 F

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 425
Del. quantity cm3/
1000S.: 16.00...20.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.0
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 2100
Del. quantity cm3/
1000S.: 30.50...34.50
Dispersion cm3/: 3.0
1000S.: (4.0)

Start:

Speed 1/min: 100
Del. quantity cm3/: 62.00...102.00
mind 1000S.: 62.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1950
TD travel mm: 5.80...6.60
mm: (5.50...6.90)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
TD travel mm: 2.50...2.90
mm: (2.20...3.20)

Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 800
 TD travel mm: 0.40...1.20
 mm: (0.10...1.50)

Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
 Supply-pump pressure bar: 3.10...3.70
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1000
 Supply-pump pressure bar: 4.80...5.40
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1250
 Supply-pump pressure bar: 5.60...6.20
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 1950
 Supply-pump pressure bar: 7.70...8.30
 Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...100.00
 quantity cm³/10s: (40.60...115.00)
 2nd speed 1/min: 1950
 Shutoff
 electromagnet Volt: 12
 Overflow : 83.40...152.90
 quantity cm³/10s: (68.40...168.90)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1950
 HBA-stroke mm: 10,0
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 37,7...41,3 D
 1000S.: (37,0...42,0) D
 2nd speed 1/min: 2400
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...10.00
 1000S.: -
 3rd speed 1/min: 2200

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 18.00...26.00
 1000S.: (16.00...28.00)

5th speed 1/min: 2100
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 30.50...34.50
 1000S.: (27.50...37.50)

10th speed 1/min: 1700
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 38.70...42.30
 1000S.: (38.00...43.00)

11th speed 1/min: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 35,50...36,50 E
 1000S.: (33,50...38,50) E

12th speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 30.50...31.50 F
 1000S.: (28,00...34,00) F

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425
 Del. quantity cm³/: 0.00...3.00
 1000S.: -

Shutoff
 electromagnet volt: -

Idle delivery:

1st speed 1/min: 425
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 16.00...20.00
 1000S.: (14.00...22.00)

Dispersion cm³/: 3.0
 1000S.: (4.0)

2nd speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 5.00...13.00
 1000S.: (3.00...15.00)

Part-load del. at 3rd inj.-qty.
 terza fermo della portata
 stop (EGR set)
 scarico) (ARF)
 gaz d'échappement-ARF)

1st speed 1/min: 1250
 Shutoff
 electromagnet Volt: 12

Del. quantity cm³/: 23.00...24.00
1000S.: (21.00...26.00)

Automatic starting fuel delivery:

1st speed 1/min: 300

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 30.00...60.00
1000S.: -

2nd speed 1/min: 480

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 24.00...34.00
1000S.: -

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 62.00...102.00
1000S.: -

Shutoff electromagnet:

Cut-in

min voltage : 10,0

Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm: 3,2...3,4

KF mm: K-OT

MS mm: 1,3...1,7

SVS max. mm: 3,8

HBA stroke mm: 10,0

TLA-E mm: 2,7

XK mm: 17,0...19,0

XL mm: 10,9...14,5

Remarks:

:
:

Pump/engine assignment:

Stroke in blocking position 0.73...
0.83 mm, referenced to outlet "B".

Attach timing-device cover

KDEP 1151.

F = Adjustment point for low full-load
delivery

E = Fuel-delivery adjustment point in
HBA range. (Correction by way of HBA
adjusting screw).

D = Adjustment point for high full-
load delivery

Adjust part-load delivery:

Setting = 12.0 mm

Always pay attention to test
instructions for DISTRIBUTOR-TYPE
INJECTION PUMPS FOR DI ENGINES!

Information additionally
required for testing fuel-injection
pump:

TEST PREREQUISITES

Calibrating-oil return temperature with
thermometer, °C :45

Calibrating-oil inlet
temperature, °C :35...40

Dwell speed, 1/min :1100
Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS FOR FUEL-INJECTION PUMP, delivery rates

Test speed, 1/min :<500
Temperature stabilisation
speed 1/min :2100
Output temperature, °C :51
Measurement temperature, °C:49

Test speed, 1/min :500...799
Temperature stabilisation
speed 1/min :2100
Output temperature, °C :48
Measurement temperature, °C:46

Test speed, 1/min :800...1199
Temperature stabilisation
speed 1/min :2100/100
Output temperature, °C :45
Measurement temperature, °C:45

Test speed, 1/min :1200...1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :42
Measurement temperature, °C:44

Test speed, 1/min : 1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :41
Measurement temperature, °C:43

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 2,5 G
Edition : 05.12.91
replaces : 07.11.89
Calibrating oil : ISO-4113

Injection pump : VE4/11F2000R366-1
Type number : 0 460 414 074
Customer Part-No. :

Customer-specific information
Customer : FORD

Engine : 2.5L DI Gr.Spec

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 023

Opening
Pressure bar: 172.00...175.00

Perforated-plate
diameter mm: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Start of delivery block
Piston stroke mm: 0.78
mm: 0.73...0.83
Outlet : B

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 2.50...2.90
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000
Setting value bar: 4.80...5.40
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 30.50...31.50 F
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 425
Del. quantity cm3/
1000S.: 18.00...22.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.0
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 2100
Del. quantity cm3/
1000S.: 30.50...34.50
Dispersion cm3/: 3.0
1000S.: (4.0)

Start:

Speed 1/min: 100
Del. quantity cm3/: 62.00...102.00
mind 1000S.: 62.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1950
TD travel mm: 5.80...6.60
mm: (5.50...6.90)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
TD travel mm: 2.50...2.90
mm: (2.20...3.20)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 800
TD travel mm: 0.40...1.20
mm: (0.10...1.50)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 3.10...3.70

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1000
Supply-pump
pressure bar: 4.80...5.40

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Supply-pump
pressure bar: 5.60...6.20

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1950
Supply-pump
pressure bar: 7.70...8.30

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow : 55.60...100.00
quantity cm³/10s: (40.60...115.00)
2nd speed 1/min: 1950
Shutoff
electromagnet Volt: 12
Overflow : 83.40...152.90
quantity cm³/10s: (68.40...168.90)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1950
HBA-stroke mm: 10,0
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 37,7...41,3 D
1000S.: (37,0...42,0) D
2nd speed 1/min: 2400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...10.00
1000S.: -
3rd speed 1/min: 2200

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 18.00...26.00
1000S.: (16.00...28.00)
5th speed 1/min: 2100

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.50...34.50
1000S.: (27.50...37.50)

10th speed 1/min: 1700

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 38.70...42.30
1000S.: (38.00...43.00)

11th speed 1/min: 1000

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35,50...36,50 E
1000S.: (33,50...38,50)E

12th speed 1/min: 500

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.50...31.50 F
1000S.: (28,00...34,00)F

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425
Del. quantity cm³/: 0.00...3.00
1000S.: -

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 425
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 18.00...22.00
1000S.: (16.00...24.00)
Dispersion cm³/: 3.0
1000S.: (4.0)

2nd speed 1/min: 500

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 7.00...15.00
1000S.: (5.00...17.00)

Part-load del.at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)

1st speed 1/min: 1250
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 23.00...24.00
1000S.: (21.00...26.00)

Automatic starting fuel delivery:

1st speed 1/min: 300

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 30.00...60.00

1000S.: -

2nd speed 1/min: 480

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 24.00...34.00

1000S.: -

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 62.00...102.00

1000S.: -

Shutoff electromagnet:

Cut-in

min voltage : 10,0

Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm: 3,2...3,4

KF mm: K-0T

MS mm: 1,3...1,7

SVS max. mm: 3,8

HBA stroke mm: 10,0

TLA-E mm: 2,7

XK mm: 17,0...19,0

XL mm: 10,9...14,5

Remarks:

:
:

Pump/engine assignment:

Stroke in blocking position 0.73...

0.83 mm, referenced to outlet "B".

Attach timing-device cover

KDEP 1151.

F = Adjustment point for low full-load delivery

E = Fuel-delivery adjustment point in HBA range. (Correction by way of HBA adjusting screw).

D = Adjustment point for high full-load delivery

Adjust part-load delivery:

Setting = 12.0 mm

Always pay attention to test instructions for DISTRIBUTOR-TYPE INJECTION PUMPS FOR DI ENGINES!

Information additionally required for testing fuel-injection pump:

TEST PREREQUISITES

Calibrating-oil return temperature with thermometer, °C :45

Calibrating-oil inlet temperature, °C :35...40

Dwell speed, 1/min :1100

Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS FOR FUEL-INJECTION PUMP, delivery rates

Test speed, 1/min :<500

Temperature stabilisation

speed 1/min :2100

Output temperature, °C :51

Measurement temperature, °C:49

Test speed, 1/min :500...799

Temperature stabilisation

speed 1/min :2100

Output temperature, °C :48

Measurement temperature, °C:46

Test speed, 1/min :800...1199

Temperature stabilisation

speed 1/min :2100/100

Output temperature, °C :45

Measurement temperature, °C:45

Test speed, 1/min :1200...1700

Temperature stabilisation

speed 1/min :100

Output temperature, °C :42

Measurement temperature, °C:44

Test speed, 1/min : 1700

Temperature stabilisation

speed 1/min :100

Output temperature, °C :41

Measurement temperature, °C:43

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 2,5 H
Edition : 05.12.91
replaces : 07.11.89
Calibrating oil : ISO-4113

Injection pump : VE4/11F2000R366-2
Type number : 0 460 414 075
Customer Part-No. :

Customer-specific information
Customer : FORD

Engine : 2.5l DI Gr.Spec

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 023

Opening
Pressure bar: 172.00...175.00

Perforated-plate
diameter mm: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Start of delivery block
Piston stroke mm: 0.78
mm: 0.73...0.83
Outlet : B

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 2.50...2.90
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000
Setting value bar: 4.80...5.40
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 30.50...31.50 F

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 425
Del. quantity cm3/
1000S.: 16.00...20.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.0
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 2100
Del. quantity cm3/
1000S.: 30.50...34.50
Dispersion cm3/: 3.0
1000S.: (4.0)

Start:

Speed 1/min: 100
Del. quantity cm3/: 62.00...102.00
mind 1000S.: 62.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1950
TD travel mm: 5.80...6.60
mm: (5.50...6.90)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
TD travel mm: 2.50...2.90
mm: (2.20...3.20)

Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 800
 TD travel mm: 0.40...1.20
 mm: (0.10...1.50)
 Shutoff
 electromagnet Volt: 12
 Supply-pump pressure characteristic:
 1st speed 1/min: 500
 Supply-pump pressure bar: 3.10...3.70
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1000
 Supply-pump pressure bar: 4.80...5.40
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1250
 Supply-pump pressure bar: 5.60...6.20
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 1950
 Supply-pump pressure bar: 7.70...8.30
 Shutoff
 electromagnet Volt: 12
 Overflow quantity at overflow valve:
 1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...100.00
 quantity cm3/10s: (40.60...115.00)
 2nd speed 1/min: 1950
 Shutoff
 electromagnet Volt: 12
 Overflow : 83.40...152.90
 quantity cm3/10s: (68.40...168.90)
 Delivery-quant. and breakaway char.:
 1st speed 1/min: 1950
 HBA-stroke mm: 10,0
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 37,7...41,3 D
 1000S.: (37,0...42,0) D
 2nd speed 1/min: 2400
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 0.00...10.00
 1000S.: -
 3rd speed 1/min: 2200

Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 18.00...26.00
 1000S.: (16.00...28.00)
 5th speed 1/min: 2100
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 30.50...34.50
 1000S.: (27.50...37.50)
 10th speed 1/min: 1700
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 38.70...42.30
 1000S.: (38.00...43.00)
 11th speed 1/min: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 35,50...36,50 E
 1000S.: (33,50...38,50)E
 12th speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 30.50...31.50 F
 1000S.: (28,00...34,00)F
 Mech. shutoff:
 Electr. shutoff:
 1st speed 1/min: 425
 Del. quantity cm3/: 0.00...3.00
 1000S.: -
 Shutoff
 electromagnet volt: -
 Idle delivery:
 1st speed 1/min: 425
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 16.00...20.00
 1000S.: (14.00...22.00)
 Dispersion cm3/: 3.0
 1000S.: (4.0)
 2nd speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 5.00...13.00
 1000S.: (3.00...15.00)
 Part-load del.at 3rd inj.-qty.
 terza fermo della portata
 stop (EGR set)
 scarico) (ARF)
 gaz d'échappement-ARF)
 1st speed 1/min: 1250
 Shutoff
 electromagnet Volt: 12

Del. quantity cm³/: 23.00...24.00
1000S.: (21.00...26.00)

Automatic starting fuel delivery:

1st speed 1/min: 300

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 30.00...60.00
1000S.: -

2nd speed 1/min: 480

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 24.00...34.00
1000S.: -

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 62.00...102.00
1000S.: -

Shutoff electromagnet:

Cut-in

min voltage : 10,0

Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm: 3,2...3,4

KF mm: K-OT

MS mm: 1,3...1,7

SVS max. mm: 3,8

HBA stroke mm: 10,0

TLA-E mm: 2,7

XK mm: 17,0...19,0

XL mm: 10,9...14,5

Remarks:

:

:

Pump/engine assignment:

Stroke in blocking position 0.73...

0.83 mm, referenced to outlet "B".

Attach timing-device cover

KDEP 1151.

F = Adjustment point for low full-load
delivery

E = Fuel-delivery adjustment point in
HBA range. (Correction by way of HBA
adjusting screw).

D = Adjustment point for high full-
load delivery

Adjust part-load delivery:

Setting = 12.0 mm

Always pay attention to test
instructions for DISTRIBUTOR-TYPE
INJECTION PUMPS FOR DI ENGINES!

Information additionally
required for testing fuel-injection
pump:

TEST PREREQUISITES

Calibrating-oil return temperature with
thermometer, °C :45

Calibrating-oil inlet
temperature, °C :35...40

Dwell speed, 1/min :1100
Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS
FOR FUEL-INJECTION PUMP,
delivery rates

Test speed, 1/min :<500
Temperature stabilisation
speed 1/min :2100
Output temperature, °C :51
Measurement temperature, °C:49

Test speed, 1/min :500...799
Temperature stabilisation
speed 1/min :2100
Output temperature, °C :48
Measurement temperature, °C:46

Test speed, 1/min :800...1199
Temperature stabilisation
speed 1/min :2100/100
Output temperature, °C :45
Measurement temperature, °C:45

Test speed, 1/min :1200...1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :42
Measurement temperature, °C:44

Test speed, 1/min : 1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :41
Measurement temperature, °C:43

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SOF 2.5 R3
Edition : 12.11.91
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/11F1900R368
Type number : 0 460 414 076
Customer Part-No. :

Customer-specific information
Customer : SOFIM

Engine : 8140.27.2580/82

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
Charge press. hPa: 1000
Setting value mm: 2.20...2.60
Shutoff
electromagnet Volt: 12

H27

Supply-pump pressure

Speed 1/min: 1100
Charge press hPa: 1000
Setting value bar: 5.50...6.10
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1750
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 55.00...56.00
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 16.50...17.50
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 325
Del. quantity cm3/
1000S.: 10.00...14.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 6.0
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 2100
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 19.50...25.50
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 40.00...80.00
mind 1000S.: 40.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1300
Charge press hPa: 1000

Inj.-qty. cm3/
 difference 1000S.: 22.00...30.00
 Shutoff
 electromagnet Volt: 12
 TD-travel dif.measurement
 correttore anticipo iniezione (SV)
 1.Speed 1/min: 1300
 Charge press hPa: 1000
 TD-travel
 difference mm: 1.90...2.10
 Shutoff
 electromagnet Volt: 12
 SP press.-dif.measurement
 pompa di mandata (FP)
 1.Speed 1/min: 1300
 Charge press hPa: 1000
 Supply pump
 pressure
 difference bar: 0.10...0.30
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1900
 Charge press hPa: 1000
 TD travel mm: 7.10...7.90
 mm: (6.80...8.20)

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1100
 Charge press hPa: 1000
 TD travel mm: 2.20...2.60
 mm: (1.70...3.10)

Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 900
 Charge press hPa: 1000
 TD travel mm: 0.60...1.40
 mm: (0.30...1.70)

Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 3.60...4.20
 bar: (3.30...4.50)

Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1100
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 5.50...6.10
 bar: (5.20...6.40)

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1900
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 7.60...8.20
 bar: (7.30...8.50)

Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm3/10s: (26.70...98.40)
 2nd speed 1/min: 1900
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm3/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 800*
 Charge-air pressure-setting
 point hPa: 400
 LDA-stroke mm: 6.5
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 42.50...43.50
 1000S.: (39.00...47.00)

2nd speed 1/min: 2350
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 0.00...5.00
 1000S.: (0.00...5.00)

5th speed 1/min: 2100
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 19.50...25.50
 1000S.: (18.00...27.00)

8th speed 1/min: 2000
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 40.00...48.00
 1000S.: (38.00...50.00)

9th speed 1/min: 1900
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 51.00...56.00
 1000S.: (50.00...57.00)

11th speed 1/min: 1500

Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 52.50...57.50
 1000S.: (51.00...59.00)
 12th speed 1/min: 1750
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 55.00...56.00
 1000S.: (52.00...59.00)
 15th speed 1/min: 1000
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 49.50...54.50
 1000S.: (48.00...56.00)
 18th speed 1/min: 500
 Charge press. hPa: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 16.50...17.50
 1000S.: (13.50...20.50)
 20th speed 1/min: 500
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 48.50...54.50
 1000S.: (47.50...55.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 325
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 Shutoff
 electromagnet volt: -

Idle delivery:

1st speed 1/min: 325
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 10.00...14.00
 1000S.: (8.00...16.00)
 Dispersion cm³/: 6.0
 1000S.: (6.5)
 2nd speed 1/min: 450
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...5.00
 1000S.: (0.00...5.00)
 3rd speed 1/min: 250
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 31.00...41.00
 1000S.: (30.00...42.00)

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

4th speed 1/min: 1300
 Charge press. hPa: 1000
 Inj.-qty. cm³/: 22.00...30.00
 difference 1000S.: (22.00...30.00)
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1300
 Charge press. hPa: 1000
 TD-travel : 1.90...2.10
 difference mm: (1.90...2.10)
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1300
 Charge press. hPa: 1000
 Supply pump-
 pressure : 0.10...0.30
 difference bar: (0.10...0.30)
 Shutoff
 electromagnet Volt: 12

Part-load del.at 3rd inj.-qty.
 terza fermo della portata
 stop (EGR set)
 scarico) (ARF)
 gaz d'échappement-ARF)
 Spacing mm: 12.0

1st speed 1/min: 1000
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 6.10...7.10
 1000S.: (3.10...10.10)

Automatic starting fuel delivery:

1st speed 1/min: 300
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 40.00...70.00
 1000S.: (40.00...70.00)

2nd speed 1/min: 400
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 15.00...45.00
 1000S.: (15.00...45.00)

4th speed 1/min: 100
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 40.00...80.00
 1000S.: (40.00...80.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: KOT
MS mm: 0.6...0.1
SVS max. mm: 0.8
LDA stroke mm: 6.5
XK mm: 20.0...22.0
XL mm: 9.3...12.7

Remarks:

:
:

* Correction at adjusting nut (46)

Operate control lever after each
manifold-pressure compensator pressure
change.

For adjustment of switching point
(EGR valve), include 12.0 mm spacer
at third fuel-delivery stop.

Always pay attention to test
instructions for DISTRIBUTOR-TYPE
INJECTION PUMPS FOR DI ENGINES!

Information additionally
required for testing fuel-injection
pump:

TEST PREREQUISITES
Calibrating-oil return temperature with
thermometer, °C :45

Calibrating-oil inlet
temperature, °C :35...40

Dwell speed, 1/min :1100
Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS
FOR FUEL-INJECTION PUMP,
delivery rates

Test speed, 1/min :<500
Temperature stabilisation
speed 1/min :2100
Output temperature, °C :51
Measurement temperature, °C:49

Test speed, 1/min :500...799
Temperature stabilisation
speed 1/min :2100
Output temperature, °C :48
Measurement temperature, °C:46

Test speed, 1/min :800...1199
Temperature stabilisation
speed 1/min :2100/100
Output temperature, °C :45
Measurement temperature, °C:45

Test speed, 1/min :1200...1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :42
Measurement temperature, °C:44

Test speed, 1/min : 1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :41
Measurement temperature, °C:43

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheer : SOF
Edition : 03.07.92
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/11F1900R373
Type number : 0 460 414 078
Customer Part-No. :

Customer-specific information
Customer : SOFIM

Engine : 8140.47.2700

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 343

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
Charge press. hPa: 1000
Setting value mm: 1.40...1.80
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100
Charge press hPa: 1000
Setting value bar: 5.60...6.20
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1800
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 60.50...61.50

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 550
Del. quantity cm3/
1000S.: 24.50...25.50

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm3/
1000S.: 11.00...15.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 6.0
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 2100
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 40.00...46.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 40.00...70.00
mind 1000S.: 40.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1100
Charge press hPa: 1000
Inj.-qty. cm3/
difference 1000S.: 25.50...33.50#

Shutoff
 electromagnet Volt: 12
 TD-travel dif.measurement
 correttore anticipo iniezione (SV)
 1.Speed 1/min: 1100
 Charge press hPa: 1000
 TD-travel
 difference mm: 0.70...0.90#
 Shutoff
 electromagnet Volt: 12
 SP press.-dif.measurement
 pompa di mandata (FP)
 1.Speed 1/min: 1100
 Charge press hPa: 1000
 Supply pump
 pressure
 difference bar: 0.10...0.30*
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

3rd speed 1/min: 1100
 Charge press hPa: 1000
 TD travel mm: 1.40...1.80
 mm: (0.90...2.30)

Shutoff
 electromagnet Volt: 12
 5th speed 1/min: 1900
 Charge press. hPa: 1000
 TD travel mm: 5.40...6.20
 mm: (5.40...6.20)

Shutoff
 electromagnet Volt: 12
 6th speed 1/min: 1500
 Charge press. hPa: 1000
 TD travel mm: 3.20...4.00
 mm: (2.90...4.30)

Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

2nd speed 1/min: 1100
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 5.60...6.20

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1900
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 8.00...8.60

Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 1500
 Charge press. hPa: 1000

Supply-pump
 pressure bar: 6.80...7.40
 Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 550
 Shutoff
 electromagnet Volt: 12
 Overflow : 75.00...119.50
 quantity cm3/10s: (75.00...119.50)
 2nd speed 1/min: 1900
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Overflow : 97.30...180.70
 quantity cm3/10s: (97.30...180.70)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700
 Charge-air pressure-setting
 point hPa: 500
 LDA-stroke mm: 6.0
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 49.00...50.00
 1000S.: (45.50...53.50)

2nd speed 1/min: 2300
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 0.00...5.00
 1000S.: (0.00...5.00)

3rd speed 1/min: 2200
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 19.00...27.00
 1000S.: (17.00...29.00)

5th speed 1/min: 2100
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 40.00...46.00
 1000S.: (38.50...47.50)

9th speed 1/min: 1900
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 57.50...63.50
 1000S.: (57.00...64.00)

12th speed 1/min: 1800
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quynntity cm3/: 60.50...61.50
 1000S.: (57.50...64.50)

15th speed 1/min: 1400
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 56.00...61.00
 1000S.: (54.50...62.50)
 17th speed 1/min: 1100
 Charge press. hPa: 1000
 Shutoff
 electromagnet volt: 12
 Del. quantity cm³/: 55.00...60.00
 1000H.: (53.50...61.50)
 18th speed 1/min: 550
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 24.50...25.50
 1000S.: (21.50...28.50)
 20th speed 1/min: 550
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 56.50...65.50
 1000S.: (55.50...66.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 375
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 375
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 11.00...15.00
 1000S.: (9.00...17.00)
 Dispersion cm³/: 6.0
 1000S.: (6.5)
 2nd speed 1/min: 450
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...5.00
 1000S.: (0.00...5.00)

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

2nd speed 1/min: 1100
 Charge press. hPa: 1000
 Inj.-qty. cm³/: 21.70...23.70*
 difference 1000S.: (21.70...23.70)
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 1100
 Charge press. hPa: 1000
 Inj.-qty. cm³/: 25.50...33.50#
 difference 1000S.: (25.50...33.50)

Shutoff
 electromagnet Volt: 12
 5th speed 1/min: 1100
 Charge press. hPa: 1000
 Inj.-qty. cm³/: 2.00...8.00'
 difference 1000S.: (2.00...8.00)
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1100
 Charge press. hPa: 1000
 TD-travel : 0.70...0.90#
 difference mm: (0.70...0.90)
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 1100
 Charge press. hPa: 1000
 TD-travel : 0.40...1.20'
 difference mm: (0.40...1.20)
 2nd speed 1/min: 1100
 Charge press. hPa: 1000
 Supply pump-
 pressure : 0.10...0.30*
 difference bar: (0.10...0.30)
 Shutoff
 electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 300
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 40.00...80.00
 1000S.: (40.00...80.00)

2nd speed 1/min: 400
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 18.00...48.00
 1000S.: (18.00...48.00)

4th speed 1/min: 100
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 40.00...70.00
 1000S.: (40.00...70.00)

Shutoff electromagnet:

Cut-in
 min voltage : 10.0
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
 K mm: 3.2...3.4
 KF mm: K-OT
 MS mm: 0.8...1.2
 SVS max. mm: 3.0
 LDA stroke mm: 6.0

XK	mm: 20.0...22.0
XL	mm: 13.1...16.5
Ya	mm: 36.9...40.9
Yb	mm: 42.5...47.9

Remarks:

:

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

Overflow restriction 0.75 mm - Part No. ..343,..344

Always pay attention to test instructions for DISTRIBUTOR-TYPE INJECTION PUMPS FOR DI ENGINES!

Information additionally required for testing fuel-injection pump:

TEST PREREQUISITES

Calibrating-oil return temperature with thermometer, °C :45

Calibrating-oil inlet temperature, °C :35...40

Dwell speed, 1/min :1100

Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS FOR FUEL-INJECTION PUMP, delivery rates

Test speed, 1/min :<500

Temperature stabilisation

speed 1/min :2100

Output temperature, °C :51

Measurement temperature, °C:49

Test speed, 1/min :500...799

Temperature stabilisation

speed 1/min :2100

Output temperature, °C :48

Measurement temperature, °C:46

Test speed, 1/min :800...1199

Temperature stabilisation

speed 1/min :2100/100

Output temperature, °C :45

Measurement temperature, °C:45

Test speed, 1/min :1200...1700

Temperature stabilisation

speed 1/min :100

Output temperature, °C :42

Measurement temperature, °C:44

Test speed, 1/min : 1700

Temperature stabilisation

speed 1/min :100

Output temperature, °C :41

Measurement temperature, °C:43

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : LEY 2,5 B
Edition : 18.02.91
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/11F1900R347-1
Type number : 0 460 414 080
Customer Part-No. :

Customer-specific information
Customer : LANDROVER

Engine : 2,5L DI TCI

Power KW: -
Speed 1/min: 1900

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 54.00...56.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 116

Opening
Pressure bar: 207.00...210.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Start of delivery block
Piston stroke mm: 1,54
mm: 0,02(0,06)

Outlet : C

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1600
Charge press. hPa: 1000
Setting value mm: 3.10...3.50
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1600
Charge press hPa: 1000
Setting value bar: 6.10...6.70
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1400
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 58.80...59.30

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 3.0
1000S.: (4.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 34.50...35.50

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm3/
1000S.: 10.00...14.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 4.0
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 2000
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 44.50...50.50

Start:

Speed 1/min: 100
Del. quantity cm3/: 80.00...130.00
mind 1000S.: 80.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1850
Charge press hPa: 1000
TD travel mm: 4.40...5.20
mm: (3.90...5.70)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1600
Charge press hPa: 1000
TD travel mm: 3.10...3.50
mm: (2.50...4.10)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1200
Charge press hPa: 1000
TD travel mm: 0.70...1.50
mm: (0.20...2.00)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 1850
Charge press. hPa: 1000
Supply-pump
pressure bar: 7.40...8.00
bar: (7.20...8.20)

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1600
Charge press. hPa: 1000
Supply-pump
pressure bar: 6.10...6.70
bar: (5.90...6.90)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1200
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.00...5.60
bar: (4.80...5.80)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1000

Overflow quantity at overflow valve:

1st speed 1/min: 800
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 55.60...100.00
quantity cm³/10s: (40.60...115.00)
2nd speed 1/min: 1850
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 12
Overflow : 83.40...166.80
quantity cm³/10s: (68.40...181.80)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800
Charge-air pressure-setting
point hPa: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 46.50...47.50
1000S.: (43.80...50.20)

3rd speed 1/min: 2200
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...10.00
1000S.: (0.00...10.00)

5th speed 1/min: 2000
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 44.50...50.50
1000S.: (42.50...52.50)

9th speed 1/min: 1850
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 56.00...60.00
1000S.: (54.80...61.20)

Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...1.50
1000S.: -

12th speed 1/min: 1400
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 57.80...58.80
1000S.: (55.5...61.10)

15th speed 1/min: 800
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...2.50
1000S.: -

18th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 34.50...35.50
1000S.: (31.80...38.20)

20th speed 1/min: 800
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...2.00
1000S.: -

Delivery-quant. and breakaway char.:

Inj.-qty.values,temp.-compensated
temperatura

1st speed 1/min: 800

Charge-air pressure-setting
point hPa: 300

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 46.50...47.50
1000S.: (43.80...50.20)

3rd speed 1/min: 2200

Charge press. hPa: 1000

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 0.00...10.00
1000S.: (0.00...10.00)

5th speed 1/min: 2000

Charge press. hPa: 1000

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 44.50...50.50
1000S.: (42.50...52.50)

9th speed 1/min: 1850

Charge press. hPa: 1000

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 56.00...60.00
1000S.: (54.80...61.20)

Charge press. hPa: 1000

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 60.50...63.50
1000S.: (62.00...62.00)

12th speed 1/min: 1400

Charge press. hPa: 1000

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 58.80...59.80
1000S.: (56.50...62.10)

15th speed 1/min: 800

Charge press. hPa: 1000

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 55.50...60.50
1000S.: (58.00...58.00)

18th speed 1/min: 500

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 34.50...35.50
1000S.: (31.80...38.20)

20th speed 1/min: 800

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 39.50...43.50
1000S.: (41.50...41.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 300

Del. quantity cm3/: 0.00...3.00
1000S.: (1.50...1.50)

Idle delivery:

1st speed 1/min: 350

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 10.00...14.00
1000S.: (7.00...17.00)

Dispersion cm3/: 4.0

1000S.: (4.0)

2nd speed 1/min: 500

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 2.00...8.00

3rd speed 1/min: 600

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 0.00...5.00
1000S.: (0.00...5.00)

Automatic starting fuel delivery:

1st speed 1/min: 150

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 82.00...132.00
1000S.: (80.00...134.00)

2nd speed 1/min: 350

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 30.00...70.00
1000S.: (30.00...70.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 80.00...130.00
1000S.: (80.00...130.00)

Shutoff electromagnet:

Cut-in

min voltage : 10,0

Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm: 3,2...3,4

KF mm: KOT

MS mm: -

SVS max. mm: -

Remarks:

:
:

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

Overflow restriction 0.75 mm - Part No. ..343,..344

Heavy-duty fuel-injection pump for DI-engines: only test using timing-device-travel measuring device with metal jacket

Always pay attention to test instructions for DISTRIBUTOR-TYPE INJECTION PUMPS FOR DI ENGINES!

Information additionally required for testing fuel-injection pump:

TEST PREREQUISITES

Calibrating-oil return temperature with thermometer, °C :55

Calibrating-oil inlet temperature, °C :42...47

Dwell speed, 1/min :1200

Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS FOR FUEL-INJECTION PUMP, delivery rates

Test speed, 1/min :<500

Temperature stabilisation

speed 1/min :2000

Output temperature, °C :65

Measurement temperature, °C:61

Test speed, 1/min :500...799

Temperature stabilisation

speed 1/min :2000

Output temperature, °C :61

Measurement temperature, °C:57

Test speed, 1/min :800...1199

Temperature stabilisation
speed 1/min :2000
Output temperature, °C :60
Measurement temperature, °C:56

Test speed, 1/min :1200...1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :53
Measurement temperature, °C:55

Test speed, 1/min : 1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :51
Measurement temperature, °C:53

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : S0F 2,5 R2
Edition : 07.10.91
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/11F1900R294-2
Type number : 0 460 414 081
Customer Part-No. :

Customer-specific information
Customer : S0FIM

Engine : 8140.27.2510/210

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
Charge press. hPa: 1000
Setting value mm: 1.10...1.50
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100
Charge press hPa: 1000
Setting value bar: 5.80...6.40
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1750
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 46.50...47.50
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 550
Del. quantity cm3/
1000S.: 20.00...21.00
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm3/
1000S.: 13.00...17.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 6.0
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 2200
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 17.50...23.50
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 40.00...80.00
mind 1000S.: 40.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1750
Charge press hPa: 1000

Inj.-qty. cm³/
 difference 1000S.: 16.5...24.5
 Shutoff
 electromagnet Volt: 12
 TD-travel dif.measurement
 correttore anticipo iniezione (SV)
 1.Speed 1/min: 1750
 Charge press hPa: 1000
 TD-travel
 difference mm: 0.3...0.5
 Shutoff
 electromagnet Volt: 12
 SP press.-dif.measurement
 pompa di mandata (FP)
 1.Speed 1/min: 1750
 Charge press hPa: 1000
 Supply pump
 pressure
 difference bar: 0.1...0.3
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1750
 Charge press hPa: 1000
 TD travel mm: 5.00...5.80
 mm: (4.70...6.10)

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1100
 Charge press hPa: 1000
 TD travel mm: 1.10...1.50
 mm: (0.60...2.00)

Shutoff
 electromagnet Volt: 12
 6th speed 1/min: 1500
 Charge press. hPa: 1000
 TD travel mm: 3.60...4.40
 mm: (3.30...4.70)

Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 550
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 4.10...4.70
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1100
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 5.80...6.40
 Shutoff
 electromagnet Volt: 12

3rd speed 1/min: 1750
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 7.70...8.30
 Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 550
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm³/10s: (26.70...98.40)
 2nd speed 1/min: 1900
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 800
 Charge-air pressure-setting
 point hPa: 450
 LDA-stroke mm: 2.8
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 37.50...38.50
 1000S.: (34.00...42.00)

2nd speed 1/min: 2350
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 0.00...5.00
 1000S.: (0.00...5.00)

5th speed 1/min: 2200
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 17.50...23.50
 1000S.: (16.00...25.00)

8th speed 1/min: 2100
 Charge press. hPa: 1000
 Shutoff

electromagnet Volt: 12
 Del. quantity cm³: 35.50...43.50
 1000S.: (33.50...45.50)

9th speed 1/min: 1900
 Charge press. hPa: 1000
 Shutoff

electromagnet Volt: 12
 Del. quantity cm³: 44.00...49.00
 1000S.: (43.00...50.00)

10th speed 1/min: 1750
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12

Del. quantity cm³/: 46.50...47.50
 1000S.: (43.50...50.50)
 11th speed 1/min: 1500
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 44.50...49.50
 1000S.: (43.00...51.00)
 12th speed 1/min: 1000
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 44.00...49.00
 1000S.: (42.50...50.50)
 18th speed 1/min: 550
 Charge press. hPa: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 20.00...21.00
 1000S.: (17.00...24.00)
 20th speed 1/min: 550
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 37.00...43.00
 1000S.: (36.00...44.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 375
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 375
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 13.00...17.00
 1000S.: (11.00...19.00)
 Dispersion cm³/: 6.0
 1000S.: (6.5)
 2nd speed 1/min: 450
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...5.00
 1000S.: (0.00...5.00)
 3rd speed 1/min: 325
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 37.00...47.00
 1000S.: (36.00...48.00)

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

4th speed 1/min: 1750
 Charge press. hPa: 1000

Inj.-qty. cm³/: 16.50...24.50
 difference 1000S.: (16.50...24.50)
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1750
 Charge press. hPa: 1000
 TD-travel : 0.30...0.50
 difference mm: (0.30...0.50)
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1750
 Charge press. hPa: 1000
 Supply pump-
 pressure : 0.10...0.30
 difference bar: (0.10...0.30)
 Shutoff
 electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 350
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 42.00...78.00
 1000S.: (42.00...78.00)

2nd speed 1/min: 450
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 12.00...48.00
 1000S.: (12.00...48.00)

4th speed 1/min: 100
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 40.00...80.00
 1000S.: (40.00...80.00)

Shutoff electromagnet:

Cut-in
 min voltage : 10.0
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
 K mm: 3.2...3.4
 KF mm: KOT
 MS mm: 0.6...1.0
 SVS max. mm: 2.5
 LDA stroke mm: 2.8
 XK mm: 20.0...22.0
 XL mm: 12.6...16.0

Remarks:

:
 :
 :
 Always pay attention to test
 instructions for DISTRIBUTOR-TYPE

INJECTION PUMPS FOR DI ENGINES!

Information additionally
required for testing fuel-injection
pump:

TEST PREREQUISITES

Calibrating-oil return temperature with
thermometer, °C :45

Calibrating-oil inlet
temperature, °C :35...40

Dwell speed, 1/min :1100

Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS FOR FUEL-INJECTION PUMP, delivery rates

Test speed, 1/min :<500

Temperature stabilisation

speed 1/min :2200

Output temperature, °C :51

Measurement temperature, °C:49

Test speed, 1/min :500...799

Temperature stabilisation

speed 1/min :2200

Output temperature, °C :48

Measurement temperature, °C:46

Test speed, 1/min :800...1199

Temperature stabilisation

speed 1/min :2200/100

Output temperature, °C :45

Measurement temperature, °C:45

Test speed, 1/min :1200...1700

Temperature stabilisation

speed 1/min :100

Output temperature, °C :42

Measurement temperature, °C:44

Test speed, 1/min : 1700

Temperature stabilisation

speed 1/min :100

Output temperature, °C :41

Measurement temperature, °C:43

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER
Edition : 09.04.92
replaces : 13.09.91
Calibrating oil : ISO-4113

Injection pump : VE4/11F2250R413
Type number : 0 460 414 082
Customer Part-No. :

Customer-specific information
Customer : PERKINS

Engine : T 4.20 (V)

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 343

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Start of delivery block
Piston stroke mm: 1,2
mm: +0,02(0,06)
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Charge press. hPa: 800

Setting value mm: 4.00...4.40
AFB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
Charge press hPa: 800
Setting value bar: 7.30...7.90
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250
Charge press. hPa: 800
Del. quantity cm3/
1000S.: 66.50...67.50

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 4.0
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 625
Del. quantity cm3/
1000S.: 29.50...30.50

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 4.0
1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm3/
1000S.: 9.00...11.00

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.0
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 2525
Charge press hPa: 800
Del. quantity cm3/
1000S.: 23.50...25.50

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 70.00...100.00
mind 1000S.: 70.00
KSB/AFB
Valve Volt: 12
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
Charge press hPa: 800
TD travel mm: 6.10...6.90
mm: (5.80...7.20)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1500
Charge press hPa: 800
TD travel mm: 4.00...4.40
mm: (3.60...4.80)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
4th speed 1/min: 1000
Charge press hPa: 800
TD travel mm: 1.90...2.70
mm: (1.60...3.00)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
8th speed 1/min: 800
Charge press. hPa: 800
TD travel mm: 1.50...3.50
mm: (1.30...3.70)

KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12
9th speed 1/min: 500
Charge press. hPa: 800
TD travel mm: 2.10...2.30
mm: (1.40...3.00)

KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 1000
Charge press. hPa: 800
Supply-pump
pressure bar: 6.00...6.60

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1500
Charge press. hPa: 800
Supply-pump
pressure bar: 7.30...7.90

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2000
Charge press. hPa: 800
Supply-pump
pressure bar: 8.30...8.90
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Overflow : 62.55...104.25
quantity cm³/10s: (47.55...119.25)
2nd speed 1/min: 2250
Charge press. hPa: 800
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Overflow : 69.50...152.90
quantity cm³/10s: (54.50...167.90)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1000
Charge-air pressure-setting
point hPa: 300
LDA-stroke mm: 6,5
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 58.50...59.50
1000S.: (55.50...62.50)

3rd speed 1/min: 2625
 Charge press. hPa: 800
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...10.00
 1000S.: (0.00...10.00)
 5th speed 1/min: 2525
 Charge press. hPa: 800
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 23.50...25.50
 1000S.: (20.50...28.50)
 9th speed 1/min: 2250
 Charge press. hPa: 800
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 70.00...74.00
 1000S.: (69.00...75.00)
 12th speed 1/min: 1250
 Charge press. hPa: 800
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 66.50...67.50
 1000S.: (64.50...69.50)
 15th speed 1/min: 1000
 Charge press. hPa: 800
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 69.50...72.50
 1000S.: (67.50...74.50)
 18th speed 1/min: 625
 Charge press. hPa: -
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 29.50...30.50
 1000S.: (27.00...33.00)
 20th speed 1/min: 500
 Charge press. hPa: -
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 27.50...32.50
 1000S.: (26.00...34.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 400
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Shutoff
 electromagnet volt: -
 KSB/AFB
 valve Volt: 12

Idle delivery:

1st speed 1/min: 400
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 9.00...11.00
 1000S.: (6.00...14.00)
 Dispersion cm³/: 3.0
 1000S.: (4.0)

2nd speed 1/min: 500
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...5.00
 1000S.: (0.00...5.00)

Automatic starting fuel delivery:

2nd speed 1/min: 350
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 20.00...40.00
 1000S.: (20.00...40.00)

4th speed 1/min: 100
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 70.00...100.00
 1000S.: (70.00...100.00)

Shutoff electromagnet:

Cut-in
 min voltage : 10.0
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
 K mm: 3.2...3.3
 KF mm: K-OT
 MS mm: 0.6...1.0
 SVS max. mm: -

LDA stroke mm: 6.5
XK mm: 20.0...22.0
XL mm: 10.7...14.1

Remarks:

:
:
:

Overflow restriction 0.75 mm - Part No.
..343,..344

Operate control lever after each
manifold-pressure compensator pressure
change.

Always pay attention to test
instructions for DISTRIBUTOR-TYPE
INJECTION PUMPS FOR DI ENGINES!

Information additionally
required for testing fuel-injection
pump:

TEST PREREQUISITES

Calibrating-oil return temperature with
thermometer, °C :45

Calibrating-oil inlet
temperature, °C :35...40

Dwell speed, 1/min :1100
Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS FOR FUEL-INJECTION PUMP, delivery rates

Test speed, 1/min :<500
Temperature stabilisation
speed 1/min :2525
Output temperature, °C :51
Measurement temperature, °C:49

Test speed, 1/min :500...799
Temperature stabilisation
speed 1/min :2525
Output temperature, °C :48
Measurement temperature, °C:46

Test speed, 1/min :800...1199
Temperature stabilisation
speed 1/min :2525/100
Output temperature, °C :45

Measurement temperature, °C:45

Test speed, 1/min :1200...1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :42
Measurement temperature, °C:44

Test speed, 1/min : 1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :41
Measurement temperature, °C:43

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 2.5 L
Edition : 23.12.91
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/11F2100R415
Type number : 0 460 414 083
Customer Part-No. :

Customer-specific information
Customer : FORD

Engine : 2.5L DI MY 92

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 343

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 114

Opening
Pressure bar: 207.00...210.00

Perforated-plate
diameter mm: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery block
Piston stroke mm: 0.35
mm: 0.30...0.40
Outlet : 8

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 4.20...4.60

Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 500
Setting value bar: 4.40...5.00
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1000
Del. quantity cm3/
1000S.: 32.20...33.20
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 3.0
1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 425
Del. quantity cm3/
1000S.: 6.00...8.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.0
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 2100
Del. quantity cm3/
1000S.: 30.50...36.50
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 50.00...90.00
mind 1000S.: 50.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 2000
TD travel mm: 7.50...8.30
mm: (7.20...8.60)
electromagnet Volt: 12
2nd speed 1/min: 1250
TD travel mm: 4.20...4.60
mm: (3.90...4.90)
Shutoff
electromagnet Volt: 12

3rd speed 1/min: 800
TD travel mm: 2.00...2.80
mm: (1.70...3.10)

Shutoff
electromagnet Volt: 12

4th speed 1/min: 500
TD travel mm: 2.80...3.00
mm: (2.50...3.30)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump pressure bar: 4.40...5.00
bar: (4.20...5.20)

Shutoff
electromagnet Volt: 12

2nd speed 1/min: 1000
Supply-pump pressure bar: 5.70...6.30
bar: (5.50...6.50)

Shutoff
electromagnet Volt: 12

3rd speed 1/min: 1250
Supply-pump pressure bar: 6.20...6.80
bar: (6.00...7.00)

Shutoff
electromagnet Volt: 12

4th speed 1/min: 2000
Supply-pump pressure bar: 7.80...8.40
bar: (7.60...8.60)

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12

Overflow : 97.00...141.00
quantity cm³/10s: (97.00...141.00)

2nd speed 1/min: 1950
Shutoff
electromagnet Volt: 12

Overflow : 115.00...184.00
quantity cm³/10s: (115.00...184.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1950
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 36.00...38.40
1000S.: (34.70...39.70)

2nd speed 1/min: 2400

Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 0.00...5.00
1000S.: (0.00...5.00)

3rd speed 1/min: 2200
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 23.20...25.20
1000S.: (19.20...29.20)

4th speed 1/min: 2100
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 30.50...36.50
1000S.: (27.50...39.50)

5th speed 1/min: 1700
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 36.50...38.90
1000S.: (35.20...40.30)

6th speed 1/min: 1000
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 32.20...33.20
1000S.: (30.20...35.20)

7th speed 1/min: 500
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 24.00...28.00
1000S.: (23.20...29.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 425
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 6.00...8.00
1000S.: (3.00...11.00)

Dispersion cm³/: 3.0
1000S.: (4.0)

2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 2.00...10.00
1000S.: (0.00...10.00)

Part-load del. at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)

Spacing mm: 20.0
1st speed 1/min: 1250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 17.00...20.00
1000S.: (16.00...21.00)

Automatic starting fuel delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.00...65.00
1000S.: (35.00...65.00)

2nd speed 1/min: 480
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 21.00...31.00
1000S.: (21.00...31.00)

3rd speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 50.00...90.00
1000S.: (50.00...90.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 2.7...2.9
KF mm: KOT
MS mm: 1.8
XK mm: -
XL mm: -

Remarks:

:
:

Overflow restriction 0.75 mm - Part No.
..343,..344

Always pay attention to test
instructions for DISTRIBUTOR-TYPE
INJECTION PUMPS FOR DI ENGINES!

Information additionally
required for testing fuel-injection
pump:

TEST PREREQUISITES

Calibrating-oil return temperature with
thermometer, °C :45

Calibrating-oil inlet
temperature, °C :35...40

Dwell speed, 1/min :1100
Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS
FOR FUEL-INJECTION PUMP,
delivery rates

Test speed, 1/min :<500
Temperature stabilisation
speed 1/min :2200
Output temperature, °C :51
Measurement temperature, °C:49

Test speed, 1/min :500...799
Temperature stabilisation
speed 1/min :2200
Output temperature, °C :48
Measurement temperature, °C:46

Test speed, 1/min :800...1199
Temperature stabilisation
speed 1/min :2200/100
Output temperature, °C :45
Measurement temperature, °C:45

Test speed, 1/min :1200...1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :42
Measurement temperature, °C:44

Test speed, 1/min : 1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :41
Measurement temperature, °C:43

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR
Edition : 09.04.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/11F2100R415-1
Type number : 0 460 414 085
Customer Part-No. :

Customer-specific information
Customer : FORD

Engine : 2.5L DI MY 92

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 343

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 114

Opening
Pressure bar: 207.00...210.00

Perforated-plate
diameter mm: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Start of delivery block
Piston stroke mm: 0.35
mm: 0.30...0.40
Outlet : B

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 4.20...4.60
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 6.20...6.80
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 25.80...26.20 F
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 425
Del. quantity cm3/
1000S.: 8.00...9.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.0
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 2200
Del. quantity cm3/
1000S.: 23.20...25.20
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 50.00...90.00
mind 1000S.: 50.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 2000
TD travel mm: 7.50...8.30
mm: (7.20...8.60)
electromagnet Volt: 12
2nd speed 1/min: 1250
TD travel mm: 4.20...4.60
mm: (3.90...4.90)

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 800
 TD travel mm: 2.00...2.80
 mm: (1.70...3.10)
 Shutoff
 electromagnet Volt: 12
 Supply-pump pressure characteristic:
 1st speed 1/min: 500
 Supply-pump
 pressure bar: 4.40...5.00
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1000
 Supply-pump
 pressure bar: 5.70...6.30
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1250
 Supply-pump
 pressure bar: 6.20...6.80
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 2000
 Supply-pump
 pressure bar: 7.80...8.40
 Shutoff
 electromagnet Volt: 12
 Overflow quantity at overflow valve:
 1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Overflow : 97.00...141.00
 quantity cm³/10s: (82.00...156.00)
 2nd speed 1/min: 1950
 Shutoff
 electromagnet Volt: 12
 Overflow : 115.00...184.00
 quantity cm³/10s: (100.00...199.00)
 Delivery-quant. and breakaway char.:
 1st speed 1/min: 1950
 HBA-stroke mm: 7.7
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 36.0...38.4 D
 1000S.: (34.7...39.7) D
 2nd speed 1/min: 2400
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...5.00
 1000S.: (0.00...5.00)
 3rd speed 1/min: 2200

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 23.20...25.20
 1000S.: (19.20...29.20)
 4th speed 1/min: 2100
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 30.50...36.50
 1000S.: (27.50...39.50)
 5th speed 1/min: 1700
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 36.50...38.90
 1000S.: (35.20...40.30)
 6th speed 1/min: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 32.2...33.2 E
 1000S.: (30.2...35.2) E
 7th speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 24.00...28.0 F
 1000S.: (23.20...29.0) F
 Mech. shutoff:
 Electr. shutoff:
 1st speed 1/min: 425
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 Shutoff
 electromagnet volt: -
 Idle delivery:
 1st speed 1/min: 425
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 8.00...9.00
 1000S.: (5.00...13.00)
 Dispersion cm³/: 3.0
 1000S.: (4.0)
 2nd speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 2.00...10.00
 1000S.: (0.00...12.00)
 Part-load del.at 3rd inj.-qty,
 terza fermo della portata
 stop (EGR set)
 scarico) (ARF)
 gaz d'échappement-ARF)
 Spacing mm: 20.0
 1st speed 1/min: 1250
 Shutoff
 electromagnet Volt: 12

Del. quantity cm³/: 18.00...19.00
1000S.: (16.00...21.00)

Automatic starting fuel delivery:

1st speed 1/min: 300

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 40.00...70.00
1000S.: -

2nd speed 1/min: 480

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 21.00...31.00
1000S.: -

3rd speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 45.00...85.00
1000S.: -

Shutoff electromagnet:

Cut-in

min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: 2.7...2.9

KF mm: KOT

MS mm: 1.8

HBA stroke mm: 7.7

XK mm: -

XL mm: -

Remarks:

⋮

Overflow restriction 0.75 mm - Part No.
..343,..344

Pump/engine assignment:

Attach timing-device cover KDEP 1151.

Plunger lift in blocking position =
0.30...

0.40 mm referenced to outlet "A".

Always pay attention to test
instructions for DISTRIBUTOR-TYPE
INJECTION PUMPS FOR DI ENGINES!

Information additionally
required for testing fuel-injection
pump:

TEST PREREQUISITES

Calibrating-oil return temperature with
thermometer, °C :45

Calibrating-oil inlet
temperature, °C :35...40

Dwell speed, 1/min :1100
Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS
FOR FUEL-INJECTION PUMP,
delivery rates

Test speed, 1/min :<500
Temperature stabilisation
speed 1/min :2200
Output temperature, °C :51
Measurement temperature, °C:49

Test speed, 1/min :500...799
Temperature stabilisation
speed 1/min :2200
Output temperature, °C :48
Measurement temperature, °C:46

Test speed, 1/min :800...1199
Temperature stabilisation
speed 1/min :2200/100
Output temperature, °C :45
Measurement temperature, °C:45

Test speed, 1/min :1200...1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :42
Measurement temperature, °C:44

Test speed, 1/min :1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :41
Measurement temperature, °C:43

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 2,5 K
Edition : 06.12.91
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE4/11F2000R431
Type number : 0 460 414 086

Customer-specific information
Customer : FORD

Engine : 2,5 L.

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 023

Opening
Pressure bar: 172.0...175.00

Perforated-plate
diameter mm: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Start of delivery block
Piston stroke mm: 0.78
mm: 0.73...0.83
Outlet : B

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 2,5...2,9

Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 5,6...6,2
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 30,5...31,5 F

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 425
Del. quantity cm3/
1000S.: 16,0...20,0

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3,0
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 2100
Del. quantity cm3/
1000S.: 30,5...34,5

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: -
mind 1000S.: 62,0
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800
TD travel mm: 0,4...1,2
mm: (0,1...1,5)
electromagnet Volt: 12
2nd speed 1/min: 1250
TD travel mm: 2,5...2,9
mm: (2,2...3,2)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1950

TD travel mm: 5,8...6,6
mm: (5,5...6,9)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 3,1...3,7
Shutoff

electromagnet Volt: 12

2nd speed 1/min: 1000

Supply-pump
pressure bar: 4,8...5,4
Shutoff

electromagnet Volt: 12

3rd speed 1/min: 1250

Supply-pump
pressure bar: 5,6...6,2
Shutoff

electromagnet Volt: 12

4th speed 1/min: 1950

Supply-pump
pressure bar: 7,7...8,3
Shutoff

electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500

Shutoff

electromagnet Volt: 12

Overflow : 55,5...100,0
quantity cm³/10s: (40,5...115,0)

2nd speed 1/min: 1950

Shutoff

electromagnet Volt: 12

Overflow : 83,3...152,7
quantity cm³/10s: (68,3...167,7)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 1950

HBA-stroke mm: 9.8

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 37,7...41,3 D
1000S.: (37,0...42,0)D

2nd speed 1/min: 2400

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 0,0...10,0
1000S.: -

3rd speed 1/min: 2200

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 18,0...26,0
1000S.: (16,0...28,0)

4th speed 1/min: 2100

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 30,5...34,5
1000S.: (27,5...37,5)

5th speed 1/min: 1700

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 38,7...42,3
1000S.: (38,0...43,0)

6th speed 1/min: 1000

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 35,5...36,5 E
1000S.: (33,5...38,5)E

7th speed 1/min: 500

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 30,5...31,5 F
1000S.: (28,0...34,0)F

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425

Del. quantity cm³/: 0,0...3,0
1000S.: -

Shutoff

electromagnet volt: -

Idle delivery:

1st speed 1/min: 425

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 16,0...20,0
1000S.: (14,0...22,0)

2nd speed 1/min: 500

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 5,0...13,0
1000S.: (2,0...15,0)

Part-load del.at 3rd inj.-qty.

terza fermo della portata

stop (EGR set)

scarico) (ARF)

gaz d'échappement-ARF)

Spacing mm: 20,0

1st speed 1/min: 1250

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 23,0...24,0
1000S.: (21,0...26,0)

Automatic starting fuel delivery:

1st speed 1/min: 300

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30,0...60,0
1000S.: -

2nd speed 1/min: 480
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 24,0...34,0
1000S.: -

Shutoff electromagnet:

Cut-in
min voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm: 3,2...3,4
KF mm: K-OT
MS mm: 1,3...1,7
HBA stroke mm: 9,8

Remarks:

Pump/engine assignment:
Stroke in blocking position 0.73...
0.83 mm, referenced to outlet "B".
Attach timing-device cover
KDEP 1151.

F = Adjustment point for low full-load
delivery
E = Fuel-delivery adjustment point in
HBA range. (Correction by way of HBA
adjusting screw).
D = Adjustment point for high full-
load delivery

Always pay attention to test
instructions for DISTRIBUTOR-TYPE
INJECTION PUMPS FOR DI ENGINES!

Information additionally
required for testing fuel-injection
pump:

TEST PREREQUISITES
Calibrating-oil return temperature with
thermometer, °C :45

Calibrating-oil inlet
temperature, °C :35...40

Dwell speed, 1/min :1100
Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS
FOR FUEL-INJECTION PUMP,
delivery rates

Test speed, 1/min :<500
Temperature stabilisation
speed 1/min :2100
Output temperature, °C :51
Measurement temperature, °C:49

Test speed, 1/min :500...799
Temperature stabilisation
speed 1/min :2100
Output temperature, °C :48
Measurement temperature, °C:46

Test speed, 1/min :800...1199
Temperature stabilisation
speed 1/min :2100/100
Output temperature, °C :45
Measurement temperature, °C:45

Test speed, 1/min :1200...1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :42
Measurement temperature, °C:44

Test speed, 1/min : 1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :41
Measurement temperature, °C:43

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VOL 3.6 Q
Edition : 12.11.91
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE6/11F1800L218-6
Type number : O 460 416 059
Customer Part-No. :

Customer-specific information
Customer : VOLVO-PENTA

Engine : AQAD 41 A

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 688 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: 0.3
(from BDC): ±0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1200
Charge press. hPa: 1000
Setting value mm: 3.90...4.30

Supply-pump pressure

Speed 1/min: 1200
Charge press hPa: 1000

K03

Setting value bar: 6.00...6.60

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 68.00...69.00
Dispersion cm3/: 5.0
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 650
Del. quantity cm3/
1000S.: 51.50...52.50

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm3/
1000S.: 15.50...19.50
Del. quantity cm3/: 3.5
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 2000
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 37.00...43.00

Start:

Speed 1/min: 100
Del. quantity cm3/: 85.00...115.00
mind 1000S.: 85.00

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

3rd speed 1/min: 1200
Charge press hPa: 1000
TD travel mm: 3.90...4.30
mm: (3.40...4.80)
4th speed 1/min: 800
Charge press hPa: 1000
TD travel mm: 0.90...1.70
mm: (0.60...2.00)
5th speed 1/min: 1400
Charge press. hPa: 1000
TD travel mm: 4.50...5.30
mm: (4.20...5.60)

Supply-pump pressure characteristic:

1st speed 1/min: 1800
Charge press. hPa: 1000

Supply-pump
pressure bar: 7.40...8.00
bar: (7.20...8.20)
2nd speed 1/min: 1200
Charge press. hPa: 1000
Supply-pump
pressure bar: 6.00...6.60
bar: (5.80...6.80)
3rd speed 1/min: 800
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.00...5.60
bar: (4.80...5.80)

Overflow quantity at overflow valve:

1st speed 1/min: 650
Charge press. hPa: -
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 1800
Charge press. hPa: 1000
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800*
Charge-air pressure-setting
point hPa: 260
LDA-stroke mm: 4.7
Del. quantity cm³/: 59.50...60.50
1000S.: (57.00...63.00)
2nd speed 1/min: 2130
Charge press. hPa: 1000
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
3rd speed 1/min: 2050
Charge press. hPa: 1000
Del. quantity cm³/: 3.00...13.00
1000S.: (3.00...13.00)
5th speed 1/min: 2000
Charge press. hPa: 1000
Del. quantity cm³/: 37.00...43.00
1000S.: (36.00...44.00)
9th speed 1/min: 1800
Charge press. hPa: 1000
Del. quantity cm³/: 65.50...68.50
1000S.: (63.50...70.50)
12th speed 1/min: 1500
Charge press. hPa: 1000
Del. quantity cm³/: 68.00...69.00
1000S.: (66.20...70.80)
18th speed 1/min: 650
Del. quantity cm³/: 51.50...52.50
1000S.: (49.00...55.00)
20th speed 1/min: 800
Charge press. hPa: 1000

Del. quantity cm³/: 71.50...74.50
1000S.: (70.00...76.00)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1900
Charge press. hPa: 1000
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Electr. shutoff:

1st speed 1/min: 350
Charge press. hPa: -
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Idle delivery:

1st speed 1/min: 350
Del. quantity cm³/: 15.50...19.50
1000S.: (12.50...22.50)
Dispersion cm³/: 3.5
1000S.: (3.5)
2nd speed 1/min: 450
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
3rd speed 1/min: 400
Del. quantity cm³/: 3.00...9.00
1000S.: (1.50...10.50)

Automatic starting fuel delivery:

1st speed 1/min: 300
Del. quantity cm³/: 85.00...115.00
1000S.: (85.00...115.00)
2nd speed 1/min: 500
Del. quantity cm³/: 55.00...85.00
1000S.: (55.00...85.00)
4th speed 1/min: 100
Del. quantity cm³/: 85.00...115.00
1000S.: (85.00...115.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: KOT
MS mm: 1.1...1.5

LDA stroke mm: 4.7

Remarks:

:
:

* Correction at adjusting nut (46)

Operate control lever after each
manifold-pressure compensator pressure
change.

Always pay attention to test
instructions for DISTRIBUTOR-TYPE
INJECTION PUMPS FOR DI ENGINES!

Information additionally
required for testing fuel-injection
pump:

TEST PREREQUISITES

Calibrating-oil return temperature with
thermometer, °C :45

Calibrating-oil inlet
temperature, °C :35...40

Dwell speed, 1/min :1100

Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS FOR FUEL-INJECTION PUMP, delivery rates

Test speed, 1/min :<500

Temperature stabilisation

speed 1/min :2000

Output temperature, °C :51

Measurement temperature, °C:49

Test speed, 1/min :500...799

Temperature stabilisation

speed 1/min :2000

Output temperature, °C :48

Measurement temperature, °C:46

Test speed, 1/min :800...1199

Temperature stabilisation

speed 1/min :2000/100

Output temperature, °C :45

Measurement temperature, °C:45

Test speed, 1/min :1200...1700

Temperature stabilisation

speed 1/min :100

Output temperature, °C :42

Measurement temperature, °C:44

Test speed, 1/min : 1700

Temperature stabilisation

speed 1/min :100

Output temperature, °C :41

Measurement temperature, °C:43

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 1 g 42
Edition : 21.09.92
Replaces : 03.91
Test oil : ISO-4113
Combination no. : 0 400 464 135
Injection pump
Pump designation : PES4A80D410/3RS1300
EP type number : 0 410 484 015
Governor
Governor design. : RSV325...1150A8C657-4L
Governor no. : 0 420 232 522

Customer-spec. information
Customer : KHD

Engine : F4L912

1st version kW : 51.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
: (1.85...2.05)

Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 10.50...10.60

Del. quantity cm³/ : 5.9...6.0

100 s : (5.8...6.2)

Spread cm³ : 0.2

100 s : (0.4)

2nd speed rpm : 325.0

Rack travel in mm : 7.5...7.7

Del. quantity cm³/ : 0.9...1.5

100 s : (0.7...1.6)

Spread cm³ : 0.2

100 s : (0.3)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del. quantity : 59.5...60.5

1000 : (58.0...62.0)

Spread cm³ : 2.50

1000 : (4.00)

RATED SPEED

1st version

Control lever

position degrees: 100...108

Testing:

1st rack travel in: 9.50

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1220...1250

3rd rack travel in: 4.00

Speed rpm : 1240...1270
4th rack travel in: 1420
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 64...72
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 7.1

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 325
Rack travel in mm : 7.50...7.70
Rack travel in mm : 2.00
Speed rpm : 430...490

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 10.50...10.60
2nd speed rpm : 500
Rack travel in m: 10.80...10.90
3rd speed rpm : 880
Rack travel in m: 10.60...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del.quantity cm3/ : 54.0...56.0
1000 s: (52.0...58.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.50
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 19.50...21.00

Remarks:

: FENDT

APPLICATION

Tractor (tractor engines)

K08

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 400 640 101AB

Injection pump
 Pump designation : PE12A95D610LS2453
 EP type number : 0 410 690 998
 Governor
 Governor design. : RQV300...1150AB1056D
 L
 Governor no. : 0 420 214 245

Customer-spec. information
 Customer : KHD

Engine : BF12L413FW

1st version kW : 240.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 4- 9- 8- 5- 2-
 11- 10- 3- 6- 7- 12

Phasing : 0-15-60-75-120-135-
 180-195-240-255-300-
 315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 9.60...9.70

Del.quantity cm3/ : 8.1...8.3
 100 s: (7.9...8.5)

Spread cm3 : 0.3
 100 s: (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 6.4...6.6
 Del.quantity cm3/ : 1.1...1.7
 100 s: (0.8...1.9)

Spread cm3 : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1150
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Aneroid pressure h: 700
 Del.quantity : 81.0...83.0
 1000 : (79.0...85.0)

Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 62...70

Testing:
 1st rack travel in: 8.60
 Speed rpm : 1190...1200
 2nd rack travel in: 4.00

Speed rpm : 1230...1260
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 10...18

Testing:
Speed rpm : 100
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION
Speed rpm : 310...380

TORQUE CONTROL
Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 9.60...9.70
2nd speed rpm : 775
Rack travel in m: 10.00...10.10
3rd speed rpm : 930
Rack travel in m: 9.80...10.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 775
Del.quantity cm³/ : 85.5...88.5
1000 s: (83.0...91.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.60
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 14.40...14.60

Remarks:

:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 21.09.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 640 101AC
Injection pump
Pump designation : PE12A95D610LS2453
EP type number : 0 410 690 998
Governor
Governor design. : RGV300...1150AB1056D
Governor no. : 0 420 214 245

Customer-spec. information
Customer : KHD

Engine : BF12L413FW

1st version kW : 208.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.15)

Rack travel in mm : 9.00...12.00
Firing order : 1- 4- 9- 8- 5- 2-
11- 10- 3- 6- 7- 12

Phasing : 0-15-60-75-120-135-
180-195-240-255-300-
315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 8.90...9.00

Del.quantity cm³/ : 7.3...7.5

100 s: (7.1...7.7)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm³/ : 1.1...1.7

100 s: (0.8...1.9)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 700

Del.quantity : 73.0...75.0

1000 : (71.0...77.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 62...70

Testing:

1st rack travel in: 7.90

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1220...1250
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control Lever
position degrees: 10...18

Testing:
Speed rpm : 100
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION
Speed rpm : 310...380

TORQUE CONTROL
Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 8.90...9.00
2nd speed rpm : 775
Rack travel in m: 9.30...9.40
3rd speed rpm : 930
Rack travel in m: 9.10...9.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 775
Del. quantity cm³/ : 77.5...80.5
1000 s: (75.0...83.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 7.90
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 14.40...14.60

Remarks:

:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 21.09.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 640 101AD
Injection pump
Pump designation : PE12A95D610LS2453
EP type number : 0 410 690 998
Governor
Governor design. : RQV300...1150AB1056D
Governor no. : 0 420 214 245

Customer-spec. information
Customer : KHD

Engine : BF12L413FW

1st version kW : 177.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
Prestroke mm : 2.00...2.10
: (1.95...2.15)

Rack travel in mm : 9.00...12.00
Firing order : 1- 4- 9- 8- 5- 2-
11- 10- 3- 6- 7- 12

Phasing : 0-15-60-75-120-135-
180-195-240-255-300-
315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150
Rack travel in mm : 8.10...8.20
Del. quantity cm³/ : 6.5...6.7
100 s : (6.3...6.9)
Spread cm³ : 0.3
100 s : (0.6)

2nd speed rpm : 300.0
Rack travel in mm : 6.4...6.6
Del. quantity cm³/ : 1.1...1.7
100 s : (0.8...1.9)
Spread cm³ : 0.3
100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1150
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1150
Aneroid pressure h: 700
Del. quantity : 65.0...67.0
1000 : (63.0...69.0)
Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 62...70

Testing:
1st rack travel in: 7.10
Speed rpm : 1190...1200
2nd rack travel in: 4.00

Speed rpm : 1220...1250
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 10...18

Testing:
Speed rpm : 100
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION
Speed rpm : 310...380

TORQUE CONTROL
Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 8.10...8.20
2nd speed rpm : 775
Rack travel in m: 8.50...8.60
3rd speed rpm : 930
Rack travel in m: 8.30...8.50

START (UT-OUT)

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 775
Del. quantity cm³/ : 68.5...71.5
1000 s: (66.0...74.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 7.10
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 14.40...14.60

Remarks:

:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 8,7 c 3
 Edition : 21.09.92
 Replaces : 7.85
 Test oil : ISO-4113
 Combination no. : 0 400 646 151
 Injection pump
 Pump designation : PE6A90D410RS2124X
 EP type number : 0 410 696 155
 Governor
 Governor design. : RQ300/1275AB658DL
 Governor no. : 0 420 202 196

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM 360

1st version kW : 125.0
 Rated speed : 2550

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25
 : (2.10...2.30)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 9.30...9.40

Del.quantity cm3/ : 7.7...7.8

100 s: (7.5...8.0)

Spread cm3 : 0.3

100 s: (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 6.1...6.3

Del.quantity cm3/ : 0.9...1.5

100 s: (0.7...1.7)

Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 77.0...78.0

1000 : (75.0...80.0)

Spread cm3 : 3.00

1000 : (4.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

Testing:

1st rack travel in: 8.30

Speed rpm : 1295...1310

2nd rack travel in: 4.00

Speed rpm : 1345...1375

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 5.0

Testing:

Speed rpm : 100

Minimum rack trave: 6.50

Speed rpm : 300

Rack travel in mm : 4.90...5.10

Rack travel in mm : 2.00

Speed rpm : 350...390

Speed rpm : 475

Maximum rack trave: 1.00

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 9.30...9.40

2nd speed rpm : 500

Rack travel in m: 10.10...10.20

3rd speed rpm : 850

Rack travel in m: 9.80...10.00

4th speed rpm : 1040

Rack travel in m: 9.40...9.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500

Del.quantity cm³/ : 72.5...75.5

1000 s: (67.0...74.0)

Speed rpm : 800

Del.quantity cm³/ : 77.0...80.0

1000 s: (75.0...82.0)

RACK STOP ADJUSTMENT

Speed rpm : 450

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.30

Speed rpm : 1295...1310

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 21.09.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 648 118AA
Injection pump
Pump designation : PE8A95D410LS2608
EP type number : 0 410 698 988
Governor
Governor design. : RQV750AB1041L
Governor no. : 0 420 212 109

Customer-spec. information
Customer : KHD

Engine : F8L413F

1st version kW : 129.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.15)
Rack travel in mm : 9.00...12.00

K17

Firing order : 1- 8- 7- 2- 6- 5-
4- 3

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 710

Rack travel in mm : 11.60...11.70

Del.quantity cm3/ : 10.2...10.4

100 s: (10.0...10.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del.quantity cm3/ : 1.3...1.9
100 s: (1.0...2.1)

Spread cm3 : 0.3
100 s: (0.5)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 710

Del.quantity : 102.0...104.0

1000 : (100.0...106.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 10.60

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 779...789

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.60

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)

Remarks:

:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 21.09.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 648 118AB

Injection pump
Pump designation : PE8A95D410LS2608
EP type number : 0 410 698 988
Governor
Governor design. : RGV750AB1041L
Governor no. : 0 420 212 109

Customer-spec. information
Customer : KHD

Engine : F8L413F

1st version kW : 122.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)
Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
 4- 3

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 710

Rack travel in mm : 11.60...11.70

Del.quantity cm3/ : 10.2...10.4

100 s: (10.0...10.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del.quantity cm3/ : 1.3...1.9

100 s: (1.0...2.1)

Spread cm3 : 0.3

100 s: (0.5)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 710

Del.quantity : 102.0...104.0

1000 : (100.0...106.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 10.60

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 779...789

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.60

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...130.0
1000 s: (117.0...133.0)

Remarks:

:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 21.09.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 648 118AC

Injection pump
Pump designation : PE8A95D410LS2608
EP type number : 0 410 698 988
Governor
Governor design. : RQV750AB1041L
Governor no. : 0 420 212 109

Customer-spec. information
Customer : KHD

Engine : F8L413F

1st version kW : 103.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.15)
Rack travel in mm : 9.00...12.00

K21

Firing order : 1- 8- 7- 2- 6- 5-
4- 3

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 710

Rack travel in mm : 10.00...10.10

Del.quantity cm³/ : 8.4...8.6

100 s: (8.2...8.8)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del.quantity cm³/ : 1.3...1.9

100 s: (1.0...2.1)

Spread cm³ : 0.3

100 s: (0.5)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 710

Del.quantity : 84.0...86.0

1000 : (82.0...88.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 9.00

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 779...789

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.00

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...130.0
1000 s: (117.0...133.0)

Remarks:

:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 21.09.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 648 118AD

Injection pump
Pump designation : PE8A95D410LS2608
EP type number : 0 410 698 988
Governor
Governor design. : RQV750AB1041L
Governor no. : 0 420 212 109

Customer-spec. information
Customer : KHD

Engine : F8L413F

1st version kW : 95.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.15)
Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
4- 3

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 710

Rack travel in mm : 9.50...9.60

Del. quantity cm3/ : 7.4...7.6

100 s: (7.2...7.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del. quantity cm3/ : 1.3...1.9

100 s: (1.0...2.1)

Spread cm3 : 0.3

100 s: (0.5)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 710

Del. quantity : 74.0...76.0

1000 : (72.0...78.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 8.50

Speed rpm : 750...755

2nd rack travel in: 4.50

Speed rpm : 779...789

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.50

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...130.0
1000 s: (117.0...133.0)

Remarks:

:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 21.09.92
Replaces : --
Test oil : ISO-4113

Combination no. : 0 400 648 122AC

Injection pump
Pump designation : PE8A95D410LS2451
EP type number : 0 410 698 992
Governor
Governor design. : RQ300/1150AB1074L
Governor no. : 0 420 200 066

Customer-spec. information
Customer : KHD

Engine : F8L413F

1st version kW : 147.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
4- 3

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 9.70...9.80

Del.quantity cm³/ : 8.5...8.7

100 s: (8.3...8.9)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del.quantity cm³/ : 1.4...2.4

100 s: (1.1...2.6)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 85.0...87.0

1000 : (83.0...89.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

Testing:

1st rack travel in: 8.70

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1220...1250

4th rack travel in: 1325
Speed rpm : 0.00...1.00

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.0

Testing:
Speed rpm : 100
Minimum rack trave: 7.50
Speed rpm : 300
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 350...390
Speed rpm : 450
Maximum rack trave: 1.00

RACK STOP ADJUSTMENT

Speed rpm : 600

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.70
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...130.0
1000 s: (117.0...133.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 21.09.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 649 196AA

Injection pump
Pump designation : PE10A95D610/4LS2452
EP type number : 0 410 699 998
Governor
Governor design. : RQV750AB996L
Governor no. : 0 420 212 091

Customer-spec. information
Customer : KHD

Engine : F10L413F

1st version kW : 134.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.15)
Rack travel in mm : 9.00...12.00

K27

Firing order : 1- 10- 9- 4- 3- 6-
5- 8- 7- 2

Phasing : 0-27-72-99-144-171-
216-243-288-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.20...10.30

Del.quantity cm³/ : 9.0...9.2

100 s : (8.8...9.4)

Spread cm³ : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del.quantity cm³/ : 0.6...1.6

100 s : (0.3...1.8)

Spread cm³ : 0.3

100 s : (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 755

travel mm : 5.20...5.40

2nd speed rpm : 785

travel mm : 7.40...7.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 90.0...92.0

1000 : (88.0...94.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : ?

Rack travel in mm : ?

Testing:

1st rack travel in: 9.20

Speed rpm : 750...755
2nd rack travel in: 4.00
Speed rpm : 773...788

START CUT-OUT

Speed 1/min : 660 (680)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.20
Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...130.0
1000 s: (117.0...133.0)

Remarks:

:

APPLICATION

Compressor

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 21.09.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 649 196AB

Injection pump
Pump designation : PE10A95D610/4LS2452
EP type number : 0 410 699 998
Governor
Governor design. : RQV750AB996L
Governor no. : 0 420 212 091

Customer-spec. information
Customer : KHD

Engine : F10L413F

1st version kW : 129.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 10- 9- 4- 3- 6-
5- 8- 7- 2

Phasing : 0-27-72-99-144-171-
216-243-288-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 9.90...10.00

Del.quantity cm3/ : 8.2...8.4

100 s: (8.0...8.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 0.6...1.6

100 s: (0.3...1.8)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 755

travel mm : 5.20...5.40

2nd speed rpm : 785

travel mm : 7.40...7.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 82.0...84.0

1000 : (80.0...86.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 8.90

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 773...788

START CUT-OUT

Speed 1/min : 660 (680)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.90
Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)

Remarks:

:

APPLICATION

Compressor

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 21.09.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 649 196AC
Injection pump
Pump designation : PE10A95D610/4LS2452
EP type number : 0 410 699 998
Governor
Governor design. : RQV750AB996L
Governor no. : 0 420 212 091

Customer-spec. information
Customer : KHD

Engine : F10L413F

1st version kW : 125.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.15)
Rack travel in mm : 9.00...12.00

L03

Firing order : 1- 10- 9- 4- 3- 6-
5- 8- 7- 2

Phasing : 0-27-72-99-144-171-
216-243-288-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
Rack travel in mm : 9.70...9.80
Del. quantity cm³/ : 7.8...8.0
100 s : (7.6...8.2)
Spread cm³ : 0.3
100 s : (0.6)

2nd speed rpm : 300.0
Rack travel in mm : 5.9...6.1
Del. quantity cm³/ : 0.6...1.6
100 s : (0.3...1.8)
Spread cm³ : 0.3
100 s : (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 755
travel mm : 5.20...5.40
2nd speed rpm : 785
travel mm : 7.40...7.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Del. quantity : 78.0...80.0
1000 : (76.0...82.0)
Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version

Testing:
1st rack travel in: 8.70
Speed rpm : 750...755
2nd rack travel in: 4.00
Speed rpm : 773...788

START CUT-OUT

Speed 1/min : 660 (680)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.70

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 120.0...130.0

1000 s: (117.0...133.0)

Remarks:

:

APPLICATION

Compressor

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : HAN 7,2 b 3
Edition : 21.09.92
Replaces : 11.89
Test oil : ISO-4113

Combination no. : 0 400 674 047

Injection pump
Pump designation : PE4A95D420RS2662-1
EP type number : 0 410 694 994
Governor
Governor design. : RSV350...1100A8C2222
-1R
Governor no. : 0 420 233 251

Customer-spec. information
Customer : HANOMAG

Engine : M744T-50E

1st version kw : 105.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25
: (2.10...2.30)

Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 4- 3

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 12.4...12.6

100 s: (12.2...12.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.5...6.7

Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 124.0...126.0

1000 : (122.0...128.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control Lever

position degrees: 95...103

Testing:

1st rack travel in: 11.20

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1170...1200

3rd rack travel in: 4.00

Speed rpm : 1185...1215

4th rack travel in: 1350
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 63...71
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.1

Testing:
Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 350
Rack travel in mm : 6.50...6.70
Rack travel in mm : 2.00
Speed rpm : 480...540

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.20...12.30
2nd speed rpm : 500
Rack travel in m: 13.10...13.20
3rd speed rpm : 910
Rack travel in m: 12.60...12.80

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del.quantity cm³/ : 130.5...133.5
1000 s: (128.0...136.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.20
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 125.0...135.0
1000 s: (122.0...138.0)
Rack travel in mm : 19.50...21.00

Remarks:

:

APPLICATION

Wheel loader

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : HAN 10,8 L
 Edition : 21.09.92
 Replaces : 04.89
 Test oil : ISO-4113
 Combination no. : 0 400 676 190
 Injection pump
 Pump designation : PE6A95D320RS2557-1R
 EP type number : 0 410 696 980
 Governor
 Governor design. : RSV350...1100A8C2217
 -1R
 Governor no. : 0 420 233 220.

Customer-spec. information
 Customer : HANOMAG

Engine : D964 T/60E

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198
 Inlet press., bar : 1.30
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test Lines : 1 680 750 003
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 2.15...2.25
 : (2.10...2.30)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1080
 Rack travel in mm : 10.40...10.50
 Del.quantity cm3/ : 9.0...9.2
 100 s : (8.8...9.4)
 Spread cm3 : 0.3
 100 s : (0.6)

2nd speed rpm : 350.0
 Rack travel in mm : 6.5...6.7
 Del.quantity cm3/ : 1.0...1.6
 100 s : (0.7...1.8)
 Spread cm3 : 0.3
 100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1080
 Del.quantity : 90.0...92.0
 1000 : (88.0...94.0)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 100...108

Testing:
 1st rack travel in: 9.20
 Speed rpm : 1140...1150
 2nd rack travel in: 4.00
 Speed rpm : 1170...1200
 3rd rack travel in: 4.00
 Speed rpm : 1190...1220

4th rack travel in: 1360
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 69...77
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.1

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 350
Rack travel in mm : 6.00...6.20
Rack travel in mm : 2.00
Speed rpm : 505...565

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1080
Rack travel in m: 10.40...10.50
2nd speed rpm : 500
Rack travel in m: 11.50...11.60
3rd speed rpm : 905
Rack travel in m: 10.90...11.10

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm³/ : 91.0...94.0
1000 s: (88.5...96.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.20
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 19.50...21.00

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 21.09.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 678 040AJ

Injection pump
Pump designation : PE8A95D410LS2608
EP type number : 0 410 698 988
Governor
Governor design. : RSV300...1325A8C1002
L
Governor no. : 0 420 232 310

Customer-spec. information
Customer : KHD

Engine : F8L413F

1st version kW : 173.0
Rated speed : 2650

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.15)

Rack travel in mm : 9.00...12.00
Firing order : 1- 8- 7- 2- 6- 5- 4-
3

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 10.00...10.10

Del. quantity cm3/ : 9.2...9.4

100 s: (9.0...9.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.4...5.6

Del. quantity cm3/ : 0.9...1.5

100 s: (0.6...1.7)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del. quantity : 92.0...94.0

1000 : (90.0...96.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 109...117

Testing:

1st rack travel in: 9.00

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1220...1250

4th rack travel in: 1575

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 66...74

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 5.5

Testing:

Speed rpm : 100

Minimum rack trave: 19.00

Speed rpm : 300

Rack travel in mm : 5.40...5.60

Rack travel in mm : 2.00

Speed rpm : 310...370

Speed rpm : 700

Maximum rack trave: 1.00

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 10.00...10.10

2nd speed rpm : 650

Rack travel in m: 10.60...10.70

3rd speed rpm : 850

Rack travel in m: 10.10...10.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650

Del.quantity cm3/ : 93.0...97.0

1000 s: (90.5...99.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.00

Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Del.quantity cm3/ : 119.0...130.0

1000 s: (116.0...133.0)

Rack travel in mm : 14.00...14.40

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 b 9
Edition : 21.09.92
Replaces : 01.92
Test oil : ISO-4113

Combination no. : 0 400 836 041

Injection pump
Pump designation : PES6A100D320/3RS2691
-2
EP type number : 9 410 230 028
Governor
Governor design. : RQV350...1100AB1227-
1R
Governor no. : 0 420 213 113

Customer-spec. information
Customer : CDC

Engine : 6 CT 8.3

1st version kW : 157.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
: (2.75...2.95)

Rack travel in mm : 10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Phasing :
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.60...12.70

Del.quantity cm³/ : 12.6...12.8

100 s: (12.4...13.1)

Spread cm³ : 0.4

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 4.9...5.1

Del.quantity cm³/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm³ : 0.6

100 s: (0.8)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.80...2.30

2nd speed rpm : 460

travel mm : 1.60...2.10

3rd speed rpm : 510

travel mm : 2.00...2.50

4th speed rpm : 630

travel mm : 2.70...3.20

5th speed rpm : 1150

travel mm : 7.30...7.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1275

Rack travel in mm : 11.30...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100
Aneroid pressure h: 900
Del. quantity : 126.5...128.5
1000 : (124.0...131.0)
Spread cm3 : 4.00
1000 : (6.50)

RATED SPEED

1st version
Control lever
position degrees: 112...120

Testing:

1st rack travel in: 11.60
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1255...1285
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 60...68
Speed rpm : 350
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 550...610

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.60...12.70
2nd speed rpm : 500
Rack travel in m: 12.60...12.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.60...12.70

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.90...10.10
2nd pressure hPa : 405
Rack travel in m: 10.90...11.00
3rd pressure hPa : 535
Rack travel in m: 11.90...12.30

START CUT-OUT

Speed 1/min : 260 (280)

L12

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm3/ : 79.0...83.0
1000 s: (76.5...85.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.60
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm3/ : 165.0...185.0
1000 s: (162.0...188.0)
Rack travel in mm : 15.30...15.70

LOW IDLE

Speed rpm : 350
Rack travel in mm : 4.90...5.10
Del. quantity cm3/ : 18.0...22.0
1000 s: (15.5...24.5)
Spread cm3 : 6.00
1000 s: (8.00)

Remarks:

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at 7° after
start of delivery.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 3,8 g 2
Edition : 21.09.92
Replaces : 3.85
Test oil : ISO-4113

Combination no. : 0 400 844 047

Injection pump
Pump designation : PES4A90D410RS2294
EP type number : 0 410 894 011
Governor
Governor design. : RGV300...1425AB740L
Governor no. : 0 420 212 037

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM 314

1st version kW : 62.5
Rated speed : 2850

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25
: (2.10...2.30)
Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.70...9.80

Del.quantity cm3/ : 6.2...6.3

100 s: (6.0...6.5)

Spread cm3 : 0.3

100 s: (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 7.2...7.4

Del.quantity cm3/ : 0.9...1.5

100 s: (0.7...1.7)

Spread cm3 : 0.2

100 s: (0.4)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1460

travel mm : 8.40...8.60

2nd speed rpm : 950

travel mm : 5.20...5.50

3rd speed rpm : 775

travel mm : 4.10...4.60

4th speed rpm : 550

travel mm : 2.70...3.00

5th speed rpm : 300

travel mm : 0.70...1.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1420

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 62.5...63.5

1000 : (60.5...65.5)

Spread cm3 : 3.00

1000 : (4.50)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:
1st rack travel in: 8.70
Speed rpm : 1455...1465
2nd rack travel in: 4.00
Speed rpm : 1535...1565
4th rack travel in: 1700
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 66...74

Testing:
Speed rpm : 100
Minimum rack travel: 9.10
Speed rpm : 300
Rack travel in mm : 7.30...7.50

CONSTANT REGULATION
Speed rpm : 370...520

START CUT-OUT

Speed 1/min : 220 (240)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 8.70
Speed rpm : 1455...1465

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 71.0...81.0
1000 s: (68.0...84.0)
Rack travel in mm : 13.70...14.30

Remarks:

:

APPLICATION

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BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 a 11
 Edition : 21.09.92
 Replaces : 04.89
 Test oil : ISO-4113
 Combination no. : 0 400 844 091
 Injection pump
 Pump designation : PES4A90D410RS2666
 EP type number : 0 410 894 029
 Governor
 Governor design. : RQV300...1400AB1065-12L
 Governor no. : 0 420 212 207

Customer spec. information
 Customer : MERCEDES-BENZ

Engine : OM364

1st version kW : 61.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.50...10.60

Del. quantity cm3/ : 5.9...6.0

100 s: (5.7...6.2)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 300.0

Rack travel in mm : 8.6...8.8

Del. quantity cm3/ : 0.8...1.2

100 s: (0.6...1.4)

Spread cm3 : 0.2

100 s: (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.80...1.30

2nd speed rpm : 500

travel mm : 2.30...2.80

3rd speed rpm : 750

travel mm : 4.10...4.30

4th speed rpm : 1500

travel mm : 8.50...8.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del. quantity : 59.0...60.0

1000 : (57.0...62.0)

Spread cm3 : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 58...66

Testing:

1st rack travel in: 9.50

Speed rpm : 1440...1450
2nd rack travel in: 4.00
Speed rpm : 1535...1565
4th rack travel in: 1700
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 20...28

Testing:
Speed rpm : 100
Minimum rack travel: 10.20
Speed rpm : 300
Rack travel in mm : 8.60...8.80

CONSTANT REGULATION
Speed rpm : 540...680

TORQUE CONTROL
Dimension a mm : 1.00
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 10.50...10.60
2nd speed rpm : 475
Rack travel in m: 11.50...11.60
3rd speed rpm : 850
Rack travel in m: 10.90...11.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 475
Del. quantity cm³/ : 45.0...47.0
1000 s: (42.5...49.5)
Speed rpm : 850
Del. quantity cm³/ : 47.5...50.5
1000 s: (45.0...53.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.50
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 17.00...17.40

Remarks:

Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 21.09.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 845 050AA

Injection pump
Pump designation : PES5A95D410RS2417
EP type number : 0 410 895 993
Governor
Governor design. : RQ750AB1240L
Governor no. : 0 420 200 110

Customer-spec. information
Customer : KHD

Engine : F5L413FR

1st version kW : 70.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 193

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
: (1.85...2.05)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.10...10.20

Del.quantity cm3/ : 9.6...9.8

100 s: (9.4...10.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.3...5.5

Del.quantity cm3/ : 0.8...1.4

100 s: (0.5...1.6)

Spread cm3 : 0.3

100 s: (0.5)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 96.0...98.0

1000 : (94.0...100.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 9.10

Speed rpm : 750...755

2nd rack travel in: 3.70

Speed rpm : 775...785

START CUT-OUT

Speed 1/min : 640 (660)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.10

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 14.00...14.40

Remarks:

:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 21.09.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 845 050AB

Injection pump
Pump designation : PESSA95D410RS2417
EP type number : 0 410 895 993
Governor
Governor design. : RQ750AB1240L
Governor no. : 0 420 200 110

Customer-spec. information
Customer : KHD

Engine : F5L413FR

1st version kW : 68.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)
Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 9.80...9.90

Del.quantity cm3/ : 9.1...9.3

100 s: (8.9...9.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.3...5.5

Del.quantity cm3/ : 0.8...1.4

100 s: (0.5...1.6)

Spread cm3 : 0.3

100 s: (0.5)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 91.0...93.0

1000 : (89.0...95.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 8.80

Speed rpm : 750...755

2nd rack travel in: 3.70

Speed rpm : 775...785

START CUT-OUT

Speed 1/min : 640 (660)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.80

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 14.00...14.40

Remarks:

:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 21.09.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 845 050AC

Injection pump
Pump designation : PES5A95D410RS2417
EP type number : 0 410 895 993
Governor
Governor design. : RQ750AB124DL
Governor no. : 0 420 200 110

Customer-spec. information
Customer : KHD

Engine : F5L413FR

1st version kW : 64.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
: (1.85...2.05)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 9.40...9.50

Del.quantity cm3/ : 8.5...8.7

100 s: (8.3...8.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.3...5.5

Del.quantity cm3/ : 0.8...1.4

100 s: (0.5...1.6)

Spread cm3 : 0.3

100 s: (0.5)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 85.0...87.0

1000 : (83.0...89.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 8.40

Speed rpm : 750...755

2nd rack travel in: 3.70

Speed rpm : 775...785

START CUT-OUT

Speed 1/min : 640 (660)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.40

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 14.00...14.40

Remarks:

:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 21.09.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 845 051AA
Injection pump
Pump designation : PES5A95D410RS2417
EP type number : 0 410 895 993
Governor
Governor design. : RQ900AB1054L
Governor no. : 0 420 200 064

Customer-spec. information
Customer : KHD

Engine : F5L413FR

1st version kW : 78.0
Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
: (1.85...2.05)
Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 9.40...9.50

Del.quantity cm3/ : 8.8...9.0

100 s: (8.6...9.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.6...5.8

Del.quantity cm3/ : 0.9...1.5

100 s: (0.6...1.7)

Spread cm3 : 0.3

100 s: (0.5)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Del.quantity : 88.0...90.0

1000 : (86.0...92.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 8.40

Speed rpm : 900...905

2nd rack travel in: 3.50

Speed rpm : 930...940

START CUT-OUT

Speed 1/min : 810 (830)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.40

Speed rpm : 900...905

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 13.20...13.80

Remarks:

:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 21.09.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 846 432AA

Injection pump
Pump designation : PES6A95D41ORS2416
EP type number : 0 410 896 961
Governor
Governor design. : RQ75DAB124DL
Governor no. : 0 420 200 110

Customer-spec. information
Customer : KHD

Engine : F6L413FR

1st version kW : 92.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X-600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
: (1.85...2.05)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.40...10.50

Del.quantity cm³/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.3...5.5

Del.quantity cm³/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm³ : 0.3

100 s: (0.5)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 101.0...103.0

1000 : (99.0...105.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 9.40

Speed rpm : 750...755

2nd rack travel in: 3.70

Speed rpm : 775...785

START CUT-OUT

Speed 1/min : 640 (660)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 12.90...13.20

Remarks:

:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 21.09.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 846 432AB
Injection pump
Pump designation : PES6A95D410RS2416
EP type number : 0 410 896 961
Governor
Governor design. : RQ750AB1240L
Governor no. : 0 420 200 110

Customer-spec. information
Customer : KHD

Engine : F6L413FR

1st version kW : 89.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x-600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
: (1.85...2.05)
Rack travel in mm : 9.00...12.00

L27

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.40...10.50

Del.quantity cm³/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.3...5.5

Del.quantity cm³/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm³ : 0.3

100 s: (0.5)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 101.0...103.0

1000 : (99.0...105.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 9.40

Speed rpm : 750...755

2nd rack travel in: 3.70

Speed rpm : 775...785

START CUT-OUT

Speed 1/min : 640 (660)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 12.90...13.20

Remarks:

:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 21.09.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 846 432AC
Injection pump
Pump designation : PES6A95D410RS2416
EP type number : 0 410 896 961
Governor
Governor design. : RQ75DAB1240L
Governor no. : 0 420 200 110

Customer-spec. information
Customer : KHD

Engine : F6L413FR

1st version kW : 82.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X-600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
: (1.85...2.05)
Rack travel in mm : 9.00...12.00

MD1

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 9.80...9.90

Del.quantity cm3/ : 9.1...9.3

100 s: (8.9...9.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.3...5.5

Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm3 : 0.3

100 s: (0.5)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 91.0...93.0

1000 : (89.0...95.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 8.80

Speed rpm : 750...755

2nd rack travel in: 3.70

Speed rpm : 775...785

START CUT-OUT

Speed 1/min : 640 (660)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.80

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 12.90...13.20

Remarks:

:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 5,7 u 6
 Edition : 21.09.92
 Replaces : 11.84
 Test oil : ISO-4113
 Combination no. : 0 400 846 492
 Injection pump
 Pump designation : PES6A90D410RS2569
 EP type number : 0 410 896 071
 Governor
 Governor design. : RQV300...1400AB1111-
 2L
 Governor no. : 0 420 212 156

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM 352

1st version kW : 88.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.80...9.90

Del.quantity cm3/ : 5.4...5.5

100 s: (5.2...5.7)

Spread cm3 : 0.3

100 s: (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 8.2...8.4

Del.quantity cm3/ : 0.9...1.5

100 s: (0.7...1.7)

Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1500

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 54.5...55.5

1000 : (52.5...57.5)

Spread cm3 : 3.00

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 108...116

Testing:

1st rack travel in: 8.80

Speed rpm : 1440...1450

2nd rack travel in: 4.00

Speed rpm : 1530...1560

4th rack travel in: 1630

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 68...76

Testing:

Speed rpm : 100
Minimum rack travel: 9.80
Speed rpm : 300
Rack travel in mm : 8.20...8.40
Rack travel in mm : 2.00
Speed rpm : 550...610

TORQUE CONTROL

Dimension a mm : 1.00
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in mm: 9.80...9.90
2nd speed rpm : 500
Rack travel in mm: 10.80...10.90
3rd speed rpm : 630
Rack travel in mm: 10.60...10.80
4th speed rpm : 1000
Rack travel in mm: 10.00...10.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del. quantity cm³/ : 46.5...49.5
1000 s: (44.5...51.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.80
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 73.0...83.0
1000 s: (70.0...86.0)
Rack travel in mm : 14.80...15.20

Remarks:

:

Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 5,7 v 10
 Edition : 21.09.92
 Replaces : 05.89
 Test oil : ISO-4113
 Combination no. : 0 400 846 493
 Injection pump
 Pump designation : PES6A90D410RS2596
 EP type number : 0 410 896 073
 Governor
 Governor design. : RQV300...1400AB1120-1L
 Governor no. : 0 420 212 157

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM352A

1st version kW : 124.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 11.90...12.00

Del.quantity cm3/ : 7.3...7.4

100 s: (7.1...7.6)

Spread cm3 : 0.3

100 s: (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 8.5...8.7

Del.quantity cm3/ : 0.9...1.5

100 s: (0.7...1.7)

Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1500

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Aneroid pressure h: 700

Del.quantity : 73.0...74.0

1000 : (71.5...76.5)

Spread cm3 : 3.00

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 111...119

Testing:

1st rack travel in: 10.90

Speed rpm : 1440...1450

2nd rack travel in: 4.00

Speed rpm : 1570...1600

4th rack travel in: 1750

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 70...78

Testing:

Speed rpm : 100
Minimum rack travel: 10.10
Speed rpm : 300
Rack travel in mm : 8.50...8.70

CONSTANT REGULATION

Speed rpm : 590...660

TORQUE CONTROL

Dimension a mm : 1.10
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 11.90...12.00
2nd speed rpm : 500
Rack travel in m: 13.00...13.10
3rd speed rpm : 1000
Rack travel in m: 12.70...12.90
4th speed rpm : 1200
Rack travel in m: 12.10...12.40

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 13.00...13.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.00...12.10
2nd pressure hPa : 320
Rack travel in m: 12.70...12.80
3rd pressure hPa : 220
Rack travel in m: 12.20...12.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 500
Del. quantity cm³/ : 67.5...69.5
1000 s: (65.5...71.5)
Aneroid pressure h: -
Speed rpm : 500

Del. quantity cm³/ : 56.0...58.0
1000 s: (54.0...60.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.90
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 72.0...82.0
1000 s: (69.0...85.0)
Rack travel in mm : 14.90...15.30

Remarks:

Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 p
Edition : 21.09.92
Replaces : 7.86
Test oil : ISO-4113

Combination no. : 0 400 846 534

Injection pump
Pump designation : PES6A95D410RS2416
EP type number : 0 410 896 961
Governor
Governor design. : RQ750AB1199L
Governor no. : 0 420 200 098

Customer-spec. information
Customer : KHD

Engine : F6L413FRT

1st version kW : 112.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
: (1.85...2.05)
Rack travel in mm : 9.00...12.00

M07

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 710

Rack travel in mm : 11.80...11.90

Del.quantity cm3/ : 12.7...12.9

100 s: (12.5...13.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.6...5.8

Del.quantity cm3/ : 0.9...1.5

100 s: (0.6...1.7)

Spread cm3 : 0.3

100 s: (0.5)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 710

Del.quantity : 127.5...129.5

1000 : (125.5...131.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 10.60

Speed rpm : 750...755

2nd rack travel in: 3.50

Speed rpm : 781...791

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.60

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 115.0...125.0
1000 s: (112.0...128.0)
Rack travel in mm : 13.20...13.40

Remarks:

:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 21.09.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 846 534AA

Injection pump
Pump designation : PES6A95D410RS2416
EP type number : 0 410 896 961
Governor
Governor design. : RQ750AB1199L
Governor no. : 0 420 200 098

Customer-spec. information
Customer : KHD

Engine : BF6L413FRT

1st version kW : 99.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
: (1.85...2.05)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 710

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 11.5...11.7

100 s: (11.3...11.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.6...5.8

Del.quantity cm3/ : 0.9...1.5

100 s: (0.6...1.7)

Spread cm3 : 0.3

100 s: (0.5)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 710

Del.quantity : 115.0...117.0

1000 : (113.0...119.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 9.90

Speed rpm : 750...755

2nd rack travel in: 3.50

Speed rpm : 780...790

BREAKAWAY

1st version

1mm rack travel Less than

full load rack tr: 9.90

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 13.20...13.40

Remarks:

:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 p 1
Edition : 21.09.92
Replaces : 08.90
Test oil : ISO-4113

Combination no. : 0 400 846 537

Injection pump
Pump designation : PES6A95D32ORS2693Z
EP type number : 0 410 896 913
Governor
Governor design. : RQ300/1300AB1204R
Governor no. : 0 420 201 640

Customer-spec. information
Customer : DAF

Engine : DNS 620

1st version kW : 150.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.15)
Rack travel in mm : 7.50...10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
& maximum rack tra: 21.00
Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 8.7...8.8
100 s: (8.5...9.0)

Spread cm3 : 0.3
100 s: (0.6)

2nd speed rpm : 300.0
Rack travel in mm : 6.6...6.8
Del.quantity cm3/ : 0.7...1.1
100 s: (0.4...1.3)
Spread cm3 : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 800
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 850
Aneroid pressure h: 700
Del.quantity : 87.5...88.5
1000 : (85.5...90.5)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version

Setting point:
Speed rpm : 800
Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.70
Speed rpm : 1345...1360
2nd rack travel in: 4.00
Speed rpm : 1425...1455
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.6

Testing:

Speed rpm : 100
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.60...6.60
Rack travel in mm : 2.00
Speed rpm : 540...580

TORQUE CONTROL

Dimension a mm : 0.55
Torque control curve - 1st version
1st speed rpm : 1290
Rack travel in m: 11.60...11.80
2nd speed rpm : 850
Rack travel in m: 13.00...13.40
3rd speed rpm : 935
Rack travel in m: 12.60...13.00
4th speed rpm : 1080
Rack travel in m: 11.90...12.20

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 12.00...12.10

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 10.90...11.10
2nd pressure hPa : 290
Rack travel in m: 11.80...11.90
3rd pressure hPa : 265
Rack travel in m: 11.30...11.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 1290
Del.quantity cm³/ : 88.0...90.0
1000 s: (85.5...92.5)
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm³/ : 65.5...66.5
1000 s: (63.5...68.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70
Speed rpm : 1345...1360

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...145.0
1000 s: (127.0...148.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.60...6.80
Del.quantity cm³/ : 7.0...11.0
1000 s: (4.5...13.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 P 2
Edition : 21.09.92
Replaces : 08.90
Test oil : ISO-4113

Combination no. : 0 400 846 538

Injection pump
Pump designation : PES6A95D320RS2693
EP type number : 0 410 896 914
Governor
Governor design. : RQ300/1300AB1204R
Governor no. : 0 420 201 640

Customer-spec. information
Customer : DAF

Engine : DNT 620

1st version kW : 130.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.15)
Rack travel in mm : 7.50...10.50

M13

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
& maximum rack tra: 21.00
Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 11.50...11.60

Del.quantity cm³/ : 7.6...7.7

100 s: (7.4...7.9)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.6...6.8

Del.quantity cm³/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 800

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 700

Del.quantity : 76.5...77.5

1000 : (74.5...79.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 800

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.70
Speed rpm : 1350...1365
2nd rack travel in: 4.00
Speed rpm : 1420...1450
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.7

Testing:

Speed rpm : 100
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.60...6.80
Rack travel in mm : 2.00
Speed rpm : 540...580

TORQUE CONTROL

Dimension a mm : 0.55
Torque control curve - 1st version
1st speed rpm : 1290
Rack travel in m: 10.60...10.80
2nd speed rpm : 850
Rack travel in m: 12.00...12.40
3rd speed rpm : 935
Rack travel in m: 11.60...12.00
4th speed rpm : 1080
Rack travel in m: 10.90...11.20

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 11.50...11.60

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 11.10...11.30
2nd pressure hPa : 250
Rack travel in m: 11.40...11.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

M14

Aneroid pressure h: 700
Speed rpm : 1290
Del.quantity cm³/ : 74.0...76.0
1000 s: (71.5...78.5)
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm³/ : 65.5...66.5
1000 s: (63.5...68.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.70
Speed rpm : 1350...1365

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...145.0
1000 s: (127.0...148.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.60...6.80
Del.quantity cm³/ : 7.0...11.0
1000 s: (4.5...13.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 6,1 p
 Edition : 21.09.92
 Replaces : 12.87
 Test oil : ISO-4113
 Combination no. : 0 400 846 549
 Injection pump
 Pump designation : PES6A95D410RS2471
 EP type number : 0 410 896 952
 Governor
 Governor design. : RQV300...1250AB1089-
 2L
 Governor no. : 0 420 212 190

Customer-spec. information
 Customer : KHD

Engine : BF6L913C

1st version kw : 141.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.60...11.70

Del.quantity cm3/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.2...7.4

Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.30...1.40

2nd speed rpm : 650
 travel mm : 3.70...3.90

3rd speed rpm : 1200
 travel mm : 6.90...7.10

4th speed rpm : 1290
 travel mm : 8.40...8.50

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1290

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 101.0...103.0

1000 : (99.0...105.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:
1st rack travel in: 10.60
Speed rpm : 1290...1300
2nd rack travel in: 4.00
Speed rpm : 1345...1375
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 69...77

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 300
Rack travel in mm : 7.20...7.40

CONSTANT REGULATION
Speed rpm : 350...485

TORQUE CONTROL
Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 11.60...11.70
2nd speed rpm : 500
Rack travel in m: 11.60...11.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 850
Del. quantity cm³/ : 95.5...98.5
1000 s: (93.0...101.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.60
Speed rpm : 1290...1300

Remarks:

:

APPLICATION

Combine-harvester

M16

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 d
Edition : 21.09.92
Replaces : 09.86
Test oil : ISO-4113

Combination no. : 0 400 846 559

Injection pump
Pump designation : PES6A90D410RS2710
EP type number : 0 410 896 082
Governor
Governor design. : RQV300...1400AB1065-9L
Governor no. : 0 420 212 202

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM 366

1st version kW : 92.0
Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
: (2.20...2.40)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.30...10.40

Del. quantity cm³/ : 5.9...6.0

100 s: (5.7...6.2)

Spread cm³ : 0.3

100 s: (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 8.7...8.9

Del. quantity cm³/ : 1.0...1.4

100 s: (0.8...1.6)

Spread cm³ : 0.2

100 s: (0.4)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 0.80...1.30

2nd speed rpm : 500
travel mm : 2.30...2.80

3rd speed rpm : 750
travel mm : 4.10...4.30

4th speed rpm : 1500
travel mm : 8.30...8.60

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm : 1500

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del. quantity : 59.0...60.0

1000 : (57.0...62.0)

Spread cm³ : 3.00

1000 : (4.50)

RATED SPEED

1st version
Control lever
position degrees: 109...117

Testing:
1st rack travel in: 9.30
Speed rpm : 1440...1450
2nd rack travel in: 4.00
Speed rpm : 1540...1570
4th rack travel in: 1650
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 72...80

Testing:
Speed rpm : 100
Minimum rack travel: 10.30
Speed rpm : 300
Rack travel in min : 8.70...8.90

CONSTANT REGULATION
Speed rpm : 530...680

TORQUE CONTROL
Dimension a mm : 1.00
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 10.30...10.40
2nd speed rpm : 500
Rack travel in m: 11.30...11.40
3rd speed rpm : 750
Rack travel in m: 11.00...11.20
4th speed rpm : 1100
Rack travel in m: 10.40...10.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del. quantity cm³/ : 45.0...47.0
1000 s: (42.5...49.5)
Speed rpm : 850
Del. quantity cm³/ : 47.5...50.5
1000 s: (45.0...53.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.30
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 17.00...17.40

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 a 4
 Edition : 21.09.92
 Replaces : 04.87
 Test oil : ISO-4113

Combination no. : 0 400 846 563

Injection pump
 Pump designation : PES6A90D410RS2667
 EP type number : 0 410 896 080
 Governor
 Governor design. : RGV300...1200AB1065-15L
 Governor no. : 0 420 212 210

Customer spec. information
 Customer : DAIMLER-BENZ

Engine : OM 366

1st version kW : 92.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 11.10...11.20

Del. quantity cm³/ : 5.8...5.9

100 s: (5.6...6.1)

Spread cm³ : 0.3

100 s: (0.5)

2nd speed rpm : 300.0

Rack travel in mm : 8.9...9.1

Del. quantity cm³/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm³ : 0.2

100 s: (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.80...1.30

2nd speed rpm : 500
 travel mm : 2.30...2.80

3rd speed rpm : 750
 travel mm : 4.30...4.70

4th speed rpm : 1260
 travel mm : 8.40...8.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1260

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del. quantity : 58.0...59.0

1000 : (56.0...61.0)

Spread cm³ : 3.00

1000 : (5.00)

RATED SPEED

1st version
Control lever
position degrees: 106...114

Testing:
1st rack travel in: 10.10
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1330...1360
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 66...74

Testing:
Speed rpm : 100
Minimum rack travel: 10.30
Speed rpm : 300
Rack travel in mm : 8.90...9.10

CONSTANT REGULATION
Speed rpm : 540...680

TORQUE CONTROL
Dimension a mm : 1.20
Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 11.10...11.20
2nd speed rpm : 600
Rack travel in m: 12.30...12.40
3rd speed rpm : 900
Rack travel in m: 11.80...12.00
4th speed rpm : 1000
Rack travel in m: 11.30...11.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 600
Del.quantity cm³/ : 54.0...56.0
1000 s: (51.5...58.5)
Speed rpm : 900
Del.quantity cm³/ : 56.0...59.0
1000 s: (53.5...61.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.10
Speed rpm : 1240...1250

M20

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 17.00...17.40

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 j
 Edition : 21.09.92
 Replaces : 11.90
 Test oil : ISO-4113

Combination no. : 0 400 846 584

Injection pump
 Pump designation : PES6A95D410RS2797
 EP type number : 0 410 896 900
 Governor
 Governor design. : RQV300...1400AB1065-20L
 Governor no. : 0 420 212 225

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 366

1st version kW : 97.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness : 6.00X1.50X600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.30...9.40

Del.quantity cm³/ : 6.6...6.8

100 s: (6.4...7.0)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 8.0...8.2

Del.quantity cm³/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.80...1.30

2nd speed rpm : 500
 travel mm : 2.30...2.80

3rd speed rpm : 750
 travel mm : 4.10...4.30

4th speed rpm : 1500
 travel mm : 8.50...8.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1450

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 66.0...68.0

1000 : (64.0...70.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 109...117

Testing:
1st rack travel in: 8.30
Speed rpm : 1450...1460
2nd rack travel in: 4.00
Speed rpm : 1520...1550
4th rack travel in: 1670
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 70...78

Testing:
Speed rpm : 100
Minimum rack travel: 9.50
Speed rpm : 300
Rack travel in mm : 8.00...8.20

CONSTANT REGULATION
Speed rpm : 450...580

TORQUE CONTROL
Dimension a mm : 1.00
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 9.30...9.40
2nd speed rpm : 500
Rack travel in m: 10.30...10.60
3rd speed rpm : 900
Rack travel in m: 9.50...9.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del.quantity cm³/ : 53.0...56.0
1000 s: (50.5...58.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.30
Speed rpm : 1450...1460

STARTING FUEL DELIVERY

Speed rpm : 100

M22

Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 13.70...14.10

Remarks:

:

Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC
Edition : 21.09.92
Replaces : 04.92
Test oil : ISO-4113

Combination no. : 0 400 846 609

Injection pump
Pump designation : PES6A95D320RS2779
EP type number : 0 410 896 903
Governor
Governor design. : RQV350...1350AB1248-3R
Governor no. : 0 420 213 128

Customer-spec. information
Customer : NAVISTAR

Engine : DTA-360

1st version kW : 127.0
Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
assembly : 1 688 901 110

Opening
pressure, bar : 250...253

Orifice plate
diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

Prestroke mm : 2.45...2.55
: (2.40...2.60)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1350

Rack travel in mm : 11.60...11.70

Del. quantity cm3/ : 7.3...7.5

100 s: (7.1...7.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 6.3...6.5
Del. quantity cm3/ : 1.7...2.1
100 s: (1.4...2.3)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350
travel mm : 7.30...7.50
2nd speed rpm : 1460
travel mm : 8.10...8.50
3rd speed rpm : 550
travel mm : 3.10...3.70
4th speed rpm : 350
travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1350
Aneroid pressure h: 900
Del. quantity : 73.5...75.5
1000 : (71.5...77.5)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control Lever
position degrees: 45...53

Testing:
1st rack travel in: 10.60
Speed rpm : 1405...1425
2nd rack travel in: 4.00
Speed rpm : 1525...1535
4th rack travel in: 1625
Speed rpm : 0.00...1.00

LOW IDLE 1
Control Lever
position degrees: 12...20

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 6.30...6.50

CONSTANT REGULATION
Speed rpm : 350...500

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 11.60...11.70

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.50...9.70
2nd pressure hPa : 200
Rack travel in m: 10.10...10.20
3rd pressure hPa : 380
Rack travel in m: 10.90...11.30

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 61.0...65.0
1000 s: (59.0...67.0)

BREAKAWAY

M24

1st version
1mm rack travel less than

full load rack tr: 10.60
Speed rpm : 1405...1425

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...170.0
1000 s: (125.0...175.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.30...6.50
Del.quantity cm3/ : 17.0...21.0
1000 s: (14.5...23.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:
: NAVISTAR #1819884C91

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC
Edition : 21.09.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 846 610
Injection pump
Pump designation : PES6A95D320RS2779
EP type number : 0 410 896 903
Governor
Governor design. : RQV350...1200AB1236-10R
Governor no. : 0 420 213 130

Customer-spec. information
Customer : NAVISTAR

Engine : DT 466

1st version kW : 145.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
assembly : 1 688 901 110

Opening
pressure, bar : 250...253

Orifice plate
diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

Prestroke mm : 2.45...2.55
: (2.40...2.60)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 12.80...12.90

Del.quantity cm³/ : 9.2...9.4

100 s: (9.0...9.6)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 5.8...6.0
Del.quantity cm³/ : 1.7...2.1
100 s: (1.4...2.3)
Spread cm³ : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1400
travel mm : 8.60...9.00
2nd speed rpm : 1250
travel mm : 7.30...7.50
3rd speed rpm : 550
travel mm : 3.10...3.70
4th speed rpm : 350
travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1200
Aneroid pressure h: 900
Del.quantity : 92.0...94.0
1000 : (90.0...96.0)
Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 42...50

Testing:
1st rack travel in: 11.80
Speed rpm : 1245...1275
2nd rack travel in: 4.00
Speed rpm : 1385...1395
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 10...18

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 5.80...6.00

CONSTANT REGULATION
Speed rpm : 350...500

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.80...12.90

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.10...9.30
2nd pressure hPa : 310
Rack travel in m: 10.00...10.10
3rd pressure hPa : 540
Rack travel in m: 11.60...12.00

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 61.5...65.5
1000 s: (59.5...67.5)

BREAKAWAY

M26

1st version
1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1245...1275

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...170.0
1000 s: (115.0...175.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.80...6.00
Del.quantity cm3/ : 17.0...21.0
1000 s: (14.5...23.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:
: NAVISTAR #1819887C91

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC
Edition : 21.09.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 846 611
Injection pump
Pump designation : PES6A95D320RS2779
EP type number : 0 410 896 903
Governor
Governor design. : RQV350...1200AB1236-9R
Governor no. : 0 420 213 129

Customer-spec. information
Customer : NAVISTAR

Engine : DT 466

1st version kW : 145.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
assembly : 1 688 901 110

Opening
pressure, bar : 250...253

Orifice plate
diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

M27

Prestroke mm : 2.45...2.55
: (2.40...2.60)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200
Rack travel in mm : 12.80...12.90
Del. quantity cm³/ : 9.2...9.4
100 s: (9.0...9.6)
Spread cm³ : 0.3
100 s: (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 5.8...6.0
Del. quantity cm³/ : 1.7...2.1
100 s: (1.4...2.3)
Spread cm³ : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1400
travel mm : 8.60...9.00
2nd speed rpm : 1250
travel mm : 7.30...7.50
3rd speed rpm : 550
travel mm : 3.10...3.70
4th speed rpm : 350
travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1200
Aneroid pressure h: 900
Del. quantity : 92.0...94.0
1000 : (90.0...96.0)
Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 42...50

Testing:
1st rack travel in: 11.80
Speed rpm : 1240...1270
2nd rack travel in: 4.00
Speed rpm : 1385...1395
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 10...18

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 5.80...6.00

CONSTANT REGULATION
Speed rpm : 350...500

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.80...12.90

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.40...9.60
2nd pressure hPa : 215
Rack travel in m: 10.20...10.30
3rd pressure hPa : 460
Rack travel in m: 11.70...12.10

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 64.5...68.5
1000 s: (62.5...70.5)

BREAKAWAY

M28

1st version
1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1240...1270

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...170.0
1000 s: (125.0...175.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.80...6.00
Del.quantity cm3/ : 17.0...21.0
1000 s: (14.5...23.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:
: NAVISTAR #1819885C91

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM 6,2 e 7
 Edition : 25.09.92
 Replaces : 06.88
 Test oil : ISO-4113
 Combination no. : 0 400 866 123
 Injection pump
 Pump designation : PES6A90D320/3RS2660
 EP type number : 0 410 896 078
 Governor
 Governor design. : RSV325...1200AOC2182
 -4R
 Governor no. : 0 420 233 213

Customer-spec. information
 Customer : MWM

Engine : TD226B-6

1st version kW : 107.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05
 : (2.90...3.10)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : -1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
 & maximum rack tra: 21.00
 Difference ° CS : 3.50...4.50

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.20...10.30

Del.quantity cm3/ : 7.7...7.8

100 s: (7.5...8.0)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 7.0...7.2

Del.quantity cm3/ : 1.0...1.6

100 s: (0.8...1.8)

Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 700

Del.quantity : 77.5...78.5

1000 : (75.5...80.5)

Spread cm3 : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever
position degrees: 94...102

Testing:

1st rack travel in: 9.20
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1265...1295
3rd rack travel in: 4.00
Speed rpm : 1285...1315
4th rack travel in: 1455
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 65...73
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.6

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 325
Rack travel in mm : 7.00...7.20
Rack travel in mm : 2.00
Speed rpm : 505...565

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 10.20...10.30
2nd speed rpm : 700
Rack travel in m: 11.00...11.10
4th speed rpm : 1010
Rack travel in m: 10.60...10.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 11.10...11.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.10...10.20
2nd pressure hPa : 210
Rack travel in m: 10.80...10.90
3rd pressure hPa : 140
Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 700
Del.quantity cm3/ : 77.0...79.0
1000 s: (74.5...81.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 61.0...62.0
1000 s: (58.0...64.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 9.20
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 128.0...138.0
1000 s: (125.0...141.0)
Rack travel in mm : 19.50...21.00

Remarks:

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 866 154MA
 Injection pump
 Pump designation : PES6A100D320/3RS2691
 -4
 EP type number : 9 410 230 030
 Governor
 Governor design. : RSV450...1100AOC2241
 -R
 Governor no. : 0 420 233 256
 Cust. part no. : 3923479
 Customer-spec. information
 Customer : C.D.C.
 Engine : 6CTA-830
 1st version kW : 157.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 047
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 101
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,6
 Test lines : 1 680 750 014
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

N03

BEGINNING OF DELIVERY

Test pressure, bar: 27...29
 Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100
 Rack travel in mm : 12.70...12.80
 Del.quantity cm3/ : 12.3...12.5
 100 s: (12.1...12.7)
 Spread cm3 : 0.4
 100 s: (0.6)
 2nd speed rpm : 550.0
 Rack travel in mm : 5.5...5.7
 Del.quantity cm3/ : 1.6...2.0
 100 s: (1.3...2.2)
 Spread cm3 : 0.6
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h: 900
 Del.quantity : 123.0...125.0
 1000 : (121.0...127.0)
 Spread cm3 : 4.00
 1000 : (6.50)

RATED SPEED

1st version

Control lever
position degrees: 43...51

Testing:

1st rack travel in: 11.70
Speed rpm : 1165...1175
2nd rack travel in: 4.00
Speed rpm : 1235...1245
3rd rack travel in: 4.00
Speed rpm : 1235...1265
4th rack travel in: 1400
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 25...33
Setting point w/out bumper spring
Speed rpm : 550
Rack travel in mm : 5.1

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 550
Rack travel in mm : 5.50...5.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.60...10.80
2nd pressure hPa : 340
Rack travel in m: 11.30...11.40
3rd pressure hPa : 465
Rack travel in m: 12.00...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 80.0...82.0
1000 s: (78.0...84.0)

BREAKAWAY

1st version

N04

1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1165...1175

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...155.0
1000 s: (130.0...160.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 550
Rack travel in mm : 5.50...5.70
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 6.00
1000 s: (8.00)

Remarks:

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
Edition : 21.09.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 866 178

Injection pump
Pump designation : PES6A100D320/3RS2691
EP type number : 9 410 230 025
Governor
Governor design. : RSV550...1100AOC2190
-56R
Governor no. : 0 420 233 295

Customer-spec. information
Customer : C.D.C.

Engine : 6CTA-830

1st version kW : 157.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

N05

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 12.3...12.5

100 s: (12.1...12.7)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 550.0

Rack travel in mm : 5.5...5.7

Del.quantity cm3/ : 1.6...2.0
100 s: (1.3...2.2)

Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 123.0...125.0

1000 : (121.0...127.0)

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 43...51

Testing:

1st rack travel in: 11.70
Speed rpm : 1165...1175
2nd rack travel in: 4.00
Speed rpm : 1225...1235
3rd rack travel in: 4.00
Speed rpm : 1225...1255
4th rack travel in: 1400
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 25...33
Setting point w/out bumper spring
Speed rpm : 550
Rack travel in mm : 5.1

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 550
Rack travel in mm : 5.50...5.70

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1165...1175

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (130.0...160.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 550
Rack travel in mm : 5.50...5.70
Del.quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:
: C.D.C. # 3923480

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 3,8 g 4
 Edition : 21.09.92
 Replaces : 9.85
 Test oil : ISO-4113

Combination no. : 0 400 874 218

Injection pump
 Pump designation : PES4A90D410RS2294
 EP type number : 0 410 894 011
 Governor
 Governor design. : RSV350...1400A0C2006
 L
 Governor no. : 0 420 232 395

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM 314

1st version kW : 62.5
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25
 : (2.10...2.30)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1380

Rack travel in mm : 10.40...10.50

Del.quantity cm3/ : 6.3...6.4

100 s: (6.1...6.6)

Spread cm3 : 0.3

100 s: (0.4)

2nd speed rpm : 350.0
 Rack travel in mm : 9.2...9.4
 Del.quantity cm3/ : 2.4...3.0
 100 s: (2.2...3.2)

Spread cm3 : 0.2
 100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3

Speed rpm : 800
 Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1380
 Del.quantity : 63.5...64.5
 1000 : (61.5...66.5)

Spread cm3 : 3.00
 1000 : (4.50)

RATED SPEED

1st version
 Control lever
 position degrees: 111...119

Testing:
 1st rack travel in: 9.40
 Speed rpm : 1420...1430
 2nd rack travel in: 4.40
 Speed rpm : 1490...1505
 4th rack travel in: 1600
 Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 79...87

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 350
Rack travel in mm : 9.20...9.40
Rack travel in mm : 2.00
Speed rpm : 530...590
Speed rpm : 650
Maximum rack trave: 1.00

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.40
Speed rpm : 1420...1430

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 14.70...15.30

LOW IDLE

Speed rpm : 350
Rack travel in mm : 9.20...9.40
Del.quantity cm3/ : 24.0...30.0
1000 s: (22.0...32.0)
Spread cm3 : 2.00
1000 s: (4.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 3,8 n 14
Edition : 21.09.92
Replaces : 10.85
Test oil : ISO-4113
Combination no. : 0 400 874 227
Injection pump
Pump designation : PES4A90D410RS2570
EP type number : 0 410 894 023
Governor
Governor design. : RSV350...1200A2C1139
-1L
Governor no. : 0 420 232 401

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM 314

1st version kW : 48.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
: (2.20...2.40)

Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200
Rack travel in mm : 10.40...10.50
Del.quantity cm3/ : 4.9...5.0
100 s: (4.7...5.2)
Spread cm3 : 0.3
100 s: (0.2)

2nd speed rpm : 350.0
Rack travel in mm : 8.9...9.5
Del.quantity cm3/ : 1.1...1.3
100 s: (0.9...1.5)
Spread cm3 : 0.2
100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1200
Del.quantity : 49.5...50.5
1000 : (47.5...52.5)
Spread cm3 : 3.00
1000 : (2.50)

RATED SPEED

1st version
Control lever
position degrees: 96...104

Testing:
1st rack travel in: 9.40
Speed rpm : 1235...1240
2nd rack travel in: 4.00
Speed rpm : 1293...1306
3rd rack travel in: 4.00

Speed rpm : 1345...1375
4th rack travel in: 1450
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: -3

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 9.2

Testing:

Speed rpm : 100

Minimum rack trave: 19.00

Speed rpm : 350

Rack travel in mm : 9.10...9.30

Rack travel in mm : 2.00

Speed rpm : 550...610

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200

Rack travel in m: 10.40...10.50

2nd speed rpm : 500

Rack travel in m: 11.80...12.00

3rd speed rpm : 900

Rack travel in m: 11.10...11.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500

Del.quantity cm3/ : 45.0...47.0

1000 s: (42.5...49.5)

Spread cm3 : -

1000 s: (5.00)

Speed rpm : 900

Del.quantity cm3/ : 49.0...51.0

1000 s: (46.5...53.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40

Speed rpm : 1235...1240

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 78.0...88.0

1000 s: (75.0...91.0)

Rack travel in mm : 17.00...17.40

LOW IDLE

N10

Speed rpm : 350
Rack travel in mm : 8.90...9.50
Del.quantity cm3/ : 11.0...13.0
1000 s: (9.0...15.0)
Spread cm3 : 2.50
1000 s: (4.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 3,8 n 13
Edition : 21.09.92
Replaces : 10.85
Test oil : ISO-4113

Combination no. : 0 400 874 237

Injection pump
Pump designation : PES4A90D410RS2570
EP type number : 0 410 894 023
Governor
Governor design. : RSV350...1300A2C1126
-2L
Governor no. : 0 420 232 403

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM 314

1st version kW : 55.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
: (2.20...2.40)

Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.90...11.00

Del. quantity cm³/ : 6.0...6.1

100 s: (5.8...6.3)

Spread cm³ : 0.3

100 s: (0.4)

2nd speed rpm : 350.0

Rack travel in mm : 8.4...9.0

Del. quantity cm³/ : 1.1...1.3

100 s: (0.9...1.5)

Spread cm³ : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Del. quantity : 60.0...61.0

1000 : (58.0...63.0)

Spread cm³ : 3.00

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 95...103

Testing:

1st rack travel in: 9.90

Speed rpm : 1340...1345

2nd rack travel in: 4.00

Speed rpm : 1386...1399

3rd rack travel in: 4.00

Speed rpm : 1425...1455
4th rack travel in: 1550
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: -3
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 8.7

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 350
Rack travel in mm : 8.60...8.80
Rack travel in mm : 2.00
Speed rpm : 540...600

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1300
Rack travel in m: 10.90...11.00
2nd speed rpm : 500
Rack travel in m: 11.60...11.80
3rd speed rpm : 700
Rack travel in m: 11.20...11.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm³/ : 48.0...52.0
1000 s: (45.5...54.5)
Spread cm³ : -
1000 s: (5.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1340...1345

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 16.50...16.90

LOW IDLE

Speed rpm : 350
Rack travel in mm : 8.40...9.00

Del.quantity cm³/ : 11.0...13.0
1000 s: (9.0...15.0)
Spread cm³ : 2.50
1000 s: (4.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 b
Edition : 21.09.92
Replaces : 02.88
Test oil : ISO-4113

Combination no. : 0 400 874 240

Injection pump
Pump designation : PES4A90D410RS2666
EP type number : 0 410 894 029
Governor
Governor design. : RSV350...1400A0C2006
-1L
Governor no. : 0 420 232 449

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM364

1st version kW : 66.0
Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values —

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
: (2.20...2.40)

Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1380

Rack travel in mm : 10.40...10.50

Del. quantity cm³/ : 6.3...6.4

100 s: (6.1...6.6)

Spread cm³ : 0.3

100 s: (0.4)

2nd speed rpm : 350.0

Rack travel in mm : 7.8...8.0

Del. quantity cm³/ : 0.6...1.0

100 s: (0.4...1.2)

Spread cm³ : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1380

Del. quantity : 63.0...64.0

1000 : (61.0...66.0)

Spread cm³ : 3.00

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 105...113

Testing:

1st rack travel in: 9.40

Speed rpm : 1430...1440

2nd rack travel in: 4.00

Speed rpm : 1480...1510

4th rack travel in: 1575

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 71...79

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 7.9

Testing:

Speed rpm : 100

Minimum rack trave: 19.50

Speed rpm : 350

Rack travel in mm : 7.80...8.00

Rack travel in mm : 2.00

Speed rpm : 445...505

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1380

Rack travel in m: 10.40...10.50

2nd speed rpm : 500

Rack travel in m: 11.70...11.80

3rd speed rpm : 900

Rack travel in m: 11.10...11.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500

Del.quantity cm3/ : 52.0...54.0

1000 s: (49.5...56.5)

Spread cm3 : -

1000 s: (5.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40

Speed rpm : 1430...1440

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 78.0...88.0

1000 s: (75.0...91.0)

Rack travel in mm : 16.30...16.70

LOW IDLE

Speed rpm : 350

Rack travel in mm : 7.80...8.00

Del.quantity cm3/ : 6.0...10.0

1000 s: (4.0...12.0)

Spread

cm3 : 2.50

1000 s: (4.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 e 2
 Edition : 21.09.92
 Replaces : 12.90
 Test oil : ISO-4113
 Combination no. : 0 400 874 248
 Injection pump
 Pump designation : PES4A90D410RS2728
 EP type number : 0 410 894 030
 Governor
 Governor design. : RSV350...750A0C2240-3L
 Governor no. : 0 420 232 559

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM364

1st version kW : 39.0
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.00...12.10

Del.quantity cm³/ : 5.7...5.9

100 s: (5.5...6.1)

Spread cm³ : 0.3

100 s: (0.4)

2nd speed rpm : 350.0

Rack travel in mm : 8.5...8.7

Del.quantity cm³/ : 1.0...1.4

100 s: (0.8...1.6)

Spread cm³ : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 2.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 57.0...59.0

1000 : (55.0...61.0)

Spread cm³ : 3.00

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 76...84

Testing:

1st rack travel in: 11.00

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 780...793

4th rack travel in: 850

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 62...70

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 8.6

Testing:

Speed rpm : 100

Minimum rack trave: 19.50

Speed rpm : 350

Rack travel in mm : 8.50...8.70

Rack travel in mm : 2.00

Speed rpm : 385...415

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 78.0...88.0

1000 s: (75.0...91.0)

Rack travel in mm : 16.50...16.90

Remarks:

:

Observe VDT-I-420/120

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 5.7 m 10
Edition : 21.09.92
Replaces : 06.88
Test oil : ISO-4113

Combination no. : 0 400 876 183

Injection pump
Pump designation : PES6A80D410RS2085X
EP type number : 0 410 886 045
Governor
Governor design. : RSV350...1400A2C1052
L
Governor no. : 0 420 232 406

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM352

1st version kW : 80.9
Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.15...2.25
: (2.10...2.30)
Rack travel in mm : 9.00...12.00

N17

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.00...9.10

Del. quantity cm³/ : 5.2...5.3

100 s : (5.0...5.4)

Spread cm³ : 0.2

100 s : (0.4)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...7.0

Del. quantity cm³/ : 1.0...1.2

100 s : (0.8...1.3)

Spread cm³ : 0.2

100 s : (0.3)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del. quantity : 52.0...53.0

1000 : (50.5...54.5)

Spread cm³ : 2.50

1000 : (4.00)

RATED SPEED

1st version

Control lever

position degrees: 108...116

Testing:

1st rack travel in: 8.00

Speed rpm : 1450...1455

2nd rack travel in: 4.00

Speed rpm : 1488...1501

3rd rack travel in: 4.00

Speed rpm : 1515...1545

4th rack travel in: 1680
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: -3
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.9

Testing:
Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 350
Rack travel in mm : 6.80...7.00
Rack travel in mm : 2.00
Speed rpm : 500...560

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 9.00...9.10
2nd speed rpm : 500
Rack travel in m: 9.90...10.00
3rd speed rpm : 850
Rack travel in m: 9.50...9.70
4th speed rpm : 950
Rack travel in m: 9.10...9.40

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del.quantity cm3/ : 47.0...49.0
1000 s: (45.0...51.0)
Speed rpm : 850
Del.quantity cm3/ : 48.5...51.5
1000 s: (46.5...53.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 8.00
Speed rpm : 1450...1455

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 14.20...14.60

LOW IDLE

Speed rpm : 350

N18

Rack travel in mm : 6.40...7.00
Del.quantity cm3/ : 10.0...12.0
1000 s: (8.5...13.5)
Spread cm3 : 2.00
1000 s: (3.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 5,2 q 2
 Edition : 21.09.92
 Replaces : 12.91
 Test oil : ISO-4113
 Combination no. : 0 400 876 377
 Injection pump
 Pump designation : PES6A95D32ORS2693Z
 EP type number : 0 410 896 913
 Governor
 Governor design. : RSV300...1300A0C2248
 -1R
 Governor no. : 0 420 233 273

Customer-spec. information
 Customer : DAF

Engine : NS156

1st version kW : 156.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 D15

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 7.50...10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
 & maximum rack tra: 21.00
 Difference * CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 8.7...8.8
 100 s: (8.5...9.0)

Spread cm3 : 0.3
 100 s: (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 6.3...6.5
 Del.quantity cm3/ : 0.6...1.0
 100 s: (0.3...1.2)
 Spread cm3 : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3

Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1000
 Aneroid pressure h: 700
 Del.quantity : 87.5...88.5
 1000 : (85.5...90.5)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 99...107

Testing:

1st rack travel in: 11.00
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1380...1410
3rd rack travel in: 4.00
Speed rpm : 1410...1440
4th rack travel in: 1575
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 67...75
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9
Speed rpm : 300
Rack travel in mm : 6.30...6.50
Rack travel in mm : 2.00
Speed rpm : 540...600

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1300
Rack travel in m: 12.30...12.40
2nd speed rpm : 500
Rack travel in m: 12.30...12.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 12.00...12.10

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 10.30...10.50
2nd pressure hPa : 290
Rack travel in m: 11.50...11.60
3rd pressure hPa : 245
Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm3/ : 53.5...54.5
1000 s: (51.5...56.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00
Speed rpm : 1340...1350

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.30...6.50
Del.quantity cm3/ : 6.0...10.0
1000 s: (3.5...12.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC
Edition : 21.09.92
Replaces : 03.92
Test oil : ISO-4113

Combination no. : 0 400 876 396

Injection pump
Pump designation : PES6A95D320RS2779
EP type number : 0 410 896 903
Governor
Governor design. : RSV350...125DA5C2256
R
Governor no. : 0 420 233 292

Customer-spec. information
Customer : NAVISTAR

Engine : DT 466

1st version kW : 142.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
assembly : 1 688 901 110

Opening
pressure, bar : 250...253

Orifice plate
diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

N21

Prestroke mm : 2.45...2.55
: (2.40...2.60)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 13.40...13.50

Del.quantity cm3/ : 9.7...9.9

100 s: (9.5...10.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.6...5.8

Del.quantity cm3/ : 1.1...1.5

100 s: (0.9...1.8)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 900

Del.quantity : 97.0...99.0

1000 : (95.0...101.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 54...62

Testing:

1st rack travel in: 12.40

Speed rpm : 1290...1300

2nd rack travel in: 4.00

Speed rpm : 1355...1365

3rd rack travel in: 4.00

Speed rpm : 1360...1370

4th rack travel in: 1450

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 19...27

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 5.7

Testing:

Speed rpm : 100

Minimum rack travel: 19.00

Speed rpm : 350

Rack travel in mm : 5.60...5.80

CONSTANT REGULATION

Speed rpm : 350...500

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 900

Rack travel mm : 13.40...13.50

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.40...9.60

2nd pressure hPa : 340

Rack travel in m: 10.50...10.60

3rd pressure hPa : 555

Rack travel in m: 12.10...12.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 66.0...70.0

1000 s: (64.0...72.0)

BREAKAWAY

1st version

N22

1mm rack travel less than

full load rack tr: 12.40

Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 135.0...155.0

1000 s: (130.0...160.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 5.60...5.80

Del.quantity cm3/ : 11.5...15.5

1000 s: (9.0...18.0)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

: NAVISTAR #1818556C91

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 21.09.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 876 403

Injection pump
Pump designation : PES6A95D410RS2471
EP type number : 0 410 896 952
Governor
Governor design. : RSV325...1250A2C661-
2L
Governor no. : 0 420 232 581

Customer-spec. information
Customer : KHD

Engine : BF6L913C

1st version kW : 132.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
: (1.85...2.05)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 9.6...9.8

100 s: (9.4...10.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 325.0

Rack travel in mm : 7.6...7.8

Del.quantity cm3/ : 0.9...1.5

100 s: (0.6...1.7)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 96.0...98.0

1000 : (94.0...100.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 95...103

Testing:

1st rack travel in: 10.70

Speed rpm : 1290...1300

2nd rack travel in: 4.00

Speed rpm : 1340...1370

3rd rack travel in: 4.00

Speed rpm : 1405...1435
4th rack travel in: 1525
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 64...72

Setting point w/out bumper spring

Speed rpm : 325

Rack travel in mm : 7.2

Speed rpm : 325

Rack travel in mm : 7.60...7.80

Rack travel in mm : 2.00

Speed rpm : 620...680

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 11.70...11.80

2nd speed rpm : 500

Rack travel in m: 11.70...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 850

Del.quantity cm³/ : 90.0...93.0

1000 s: (87.5...95.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70

Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 120.0...130.0

1000 s: (117.0...133.0)

Rack travel in mm : 16.10...16.50

Remarks:

:

APPLICATION

Compressor

Screw in torque-control-spring

retainer to make contact at 500 l/min.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 21.09.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 401 840 734AA

Injection pump
Pump designation : PE12P110A920LS3173
EP type number : 0 411 810 708
Governor
Governor design. : RQV300...1075PA746
Governor no. : 0 421 813 477

Customer-spec. information
Customer : KHD

Engine : BF12L513

1st version kW : 300.0
Rated speed : 2150

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 4- 9- 8- 5- 2-

N25

11- 10- 3- 6- 7- 12

Phasing : 0-15-60-75-120-135-
180-195-240-255-300-
315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1075

Rack travel in mm : 10.50...10.60

Del. quantity cm³/ : 11.6...12.0

100 s : (11.3...12.2)

Spread cm³ : 0.4

100 s : (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 6.6...6.8

Del. quantity cm³/ : 1.4...2.0

100 s : (1.1...2.2)

Spread cm³ : 0.4

100 s : (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.30...1.40

2nd speed rpm : 380
travel mm : 2.30...2.70

3rd speed rpm : 430
travel mm : 2.80...3.30

4th speed rpm : 700
travel mm : 5.30...5.60

5th speed rpm : 1120
travel mm : 8.40...8.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1120

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1075

Aneroid pressure h : 750

Del. quantity : 116.0...120.0

1000 : (113.5...122.5)

Spread cm3 : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 50...58

Testing:

1st rack travel in: 9.50
Speed rpm : 1115...1125
2nd rack travel in: 5.50
Speed rpm : 1145...1175
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 15...23

Testing:

Speed rpm : 100
Minimum rack travel: 8.20
Speed rpm : 300
Rack travel in mm : 6.60...6.80

CONSTANT REGULATION

Speed rpm : 315...465

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1075
Rack travel in m: 10.50...10.60
2nd speed rpm : 650
Rack travel in m: 10.50...10.70

START CUT-OUT

Speed 1/min : 220 (240)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.50
Speed rpm : 1115...1125

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...165.0
1000 s: (131.0...169.0)

Remarks:

:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

11- 10- 3- 6- 7- 12

Note remarks

Test sheet : KHD
Edition : 21.09.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 401 840 734AB
Injection pump
Pump designation : PE12P110A920LS3173
EP type number : 0 411 810 708
Governor
Governor design. : RQV300...1075PA746
Governor no. : 0 421 813 477

Customer-spec. information
Customer : KHD

Engine : BF12L513

1st version kW : 285.0
Rated speed : 2150

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 4- 9- 8- 5- 2-

Phasing : 0-15-60-75-120-135-
180-195-240-255-300-
315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1075

Rack travel in mm : 10.10...10.20

Del. quantity cm³/ : 10.8...11.2

100 s : (10.5...11.4)

Spread cm³ : 0.4

100 s : (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 6.6...6.8

Del. quantity cm³/ : 1.4...2.0

100 s : (1.1...2.2)

Spread cm³ : 0.4

100 s : (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.30...1.40

2nd speed rpm : 380

travel mm : 2.30...2.70

3rd speed rpm : 430

travel mm : 2.80...3.30

4th speed rpm : 700

travel mm : 5.30...5.60

5th speed rpm : 1120

travel mm : 8.40...8.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1120

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1075

Del. quantity : 108.0...112.0

1000 : (105.5...114.5)

Spread cm³ : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 50...58

Testing:
1st rack travel in: 9.10
Speed rpm : 1115...1125
2nd rack travel in: 5.50
Speed rpm : 1140...1170
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 15...23

Testing:
Speed rpm : 100
Minimum rack travel: 8.20
Speed rpm : 300
Rack travel in mm : 6.60...6.80

CONSTANT REGULATION
Speed rpm : 315...465

TORQUE CONTROL
Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1075
Rack travel in m: 10.10...10.20
2nd speed rpm : 650
Rack travel in m: 10.10...10.30

START CUT-OUT

Speed 1/min : 220 (240)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.10
Speed rpm : 1115...1125

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 135.0...165.0
1000 s: (131.0...169.0)

Remarks:

: